Montana Outdoors

March/April 1983
One Dollar

Montana Outdoors

March/April 1983, Vol. 14, No. 2
(USPS 260 280)

Front Cover
Steve Wirt's photograph illustrates, without a doubt, that the "bluebird carries the sky on his back." Every state except Hawaii is home to at least one species of bluebird, with two species regularly found in Montana, the mountain (pictured) and western.

Inside Front Cover
Diane Ensign-Caughey's photograph was taken near Whitefish. Hiking to this overview of the Flathead Valley is only one of the countless recreational opportunities in Montana.

Back Cover
Each year, millions of Americans head for the "wide-open spaces" to enjoy backpacking, boating, camping, fishing, hunting, and simply places to "get away from it all." National Wildlife Week '83 underscores the importance of public lands with this year's theme: "This is Your Land."

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Montana Outdoors, the official publication of the Montana Department of Fish, Wildlife and Parks, is published bimonthly (January, March, May, July, September, and November). Contributions (manuscripts or illustrations) are welcome with the understanding that the department or the editor cannot be responsible for loss or damage. All contributions will be published at the discretion of the editor. Subscription rates are $5 for one year, $9.50 for two years, $13 for three years. (Please add $2 per year for foreign subscriptions.) Individual copies and back issues cost $1 each, plus 25 cents for postage and handling. Although **Montana Outdoors** is copyrighted, permission to reprint articles is available by writing our office or phoning us at 406/449-2474. All correspondence should be addressed: **Montana Outdoors**, Department of Fish, Wildlife and Parks, 1420 E. Sixth, Helena, MT 59620. © Montana Department of Fish, Wildlife and Parks, 1983. All rights reserved. Indexed by States' Periodical Index, 1660 Smithville Rd., Havre, MT 59501

Postmaster: Send address changes to: **Montana Outdoors**, Department of Fish, Wildlife and Parks, 1420 E. Sixth, Helena, MT 59620. Second-class postage paid at Helena, MT 59620 and additional mailing offices.

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With The Sky On Th

"The bluebird carries the sky on his back."

—Henry David Thoreau

by Dennis Flath and Art Aylesworth

ATTRACTIVE, colorful, and appealing, bluebirds are unique to North America. As members of the thrush family (Turdidae), they are closely related to our most familiar thrush, the American robin. But unlike robins, bluebirds nest in cavities excavated by other birds as nest sites (see "Cavity Nesters: Part of Montana's Bird Heritage," *Montana Outdoors*, July/August 1979). Three species of bluebirds occur on our continent, with two regularly found in Montana.

The mountain bluebird *(Sialia currucoides)*, the most familiar species, inhabits the intermountain region from southern Arizona to Alaska and may be found nearly anywhere in Montana. Western bluebirds *(Sialia mexicana)* have a more restricted range, from southern British Columbia to central Mexico, and west to the Pacific Coast. In Montana, they have formerly been seen as far east as Helena and Augusta. The eastern bluebird *(Sialia sialis)* generally ranges from the Mississippi Valley to the Atlantic Coast, although a few have been recorded in eastern Montana. Thus, every state except Hawaii is home to at least one species of bluebird. Many western states are blessed with both western and mountain bluebirds during summer. All bluebird species migrate to southern states during winter, rarely wintering farther north than Colorado.

The history of bluebirds in North America reads like a good news-bad news story. Numerous events, all associated with man's activities, have affected them in many ways.

The arrival of European settlers to America's shores was probably a boon to native bluebirds. Clearing land for farming and cutting forests for timber created open habitat and undoubtedly spurred bluebird numbers. Wooden fence posts, large stumps, and, later, power poles became available for excavation as nest sites by woodpeckers, and, in turn, for use by bluebirds. As civilization pushed west, so did these habitat improvements for the bluebird. In Montana, such benefits probably occurred primarily from 1880 to 1930.

But, recent times have been less favorable for bluebirds in North America. Today, in many sections of the country, bird lovers have not seen a bluebird for over 30 years. Some estimates suggest a 90% loss in numbers of eastern bluebirds within the past 50 to 60 years. Populations of western and mountain bluebirds have also significantly declined, although not so dramatically as the eastern bluebird.

Basically, bluebird habitat is open fields and pastures, or open areas with lightly stocked stands of trees. West-

eir Backs

The mountain bluebird (far left photo: Tom J. Ulrich) is found throughout Montana. These very young western bluebirds (above) will be fed tiny insects—almost exclusively by the female—for the first five days of their lives. As they consume more and larger insects, the male (below) joins in the feeding (photos: Bryan R. Shantz).

ern bluebirds seem to need some trees, and ponderosa pine is the preferred species. Groves of pine adjacent to open pastures or meadows provide ideal western bluebird habitat. However, mountain bluebirds often occur at higher altitudes and are less concerned about trees. In fact, if nesting sites are available, mountain bluebirds readily use areas totally devoid of trees. As an example, in a treeless area of southwestern Montana during 1982, a pair of mountain bluebirds nested in an erosion hole in a sandstone pillar, while another pair used the abandoned mud nest of a cliff swallow. Mountain bluebirds in Montana and Alberta have extensively used abandoned nests of bank swallows in cut banks along rivers and creeks.

The male usually selects the nest site and then coaxes the female into examining and accepting the cavity or nest box. Upon her approval, the male begins a courtship flight of flip-flops and dizzying short flights of exuberance. Within a few days, a nest of very fine grass is built. When egg-laying begins, the female lays an egg daily until the clutch (usually from four to six eggs) is complete. Incubation begins immediately after the last egg is laid and lasts for 13 or 14 days.

Males of all three species prefer nest sites with a perch—such as a limb, wire, or post—from which to view the nesting cavity or box during incubation. This provides the male with an opportunity to warn the incubating female of approaching danger, since she is unable to view potential hazards from inside the nest cavity.

Upon hatching, the very young bluebirds are fed tiny insects, almost exclusively by the female, for the first five days. As the young consume more and larger insects, the male joins in the feeding. In cases of second broods, young birds from the first brood often assist with feeding.

If one adult dies or if the food supply is short, it may be impossible to raise a large brood, and some will die.

Bluebirds seek open areas because of their food habits. Being thrushes, they seek food on the ground and feed primarily on ground-dwelling insects, especially cutworms and grasshoppers which are harmful to agriculture. Bluebirds locate insects from a hovering position or from their nearby perches. If they find a nest of hatching grasshoppers or grubs in cattle droppings, they return again and again until the easily available food is gone. Annually, about two-thirds of a bluebird's diet is insects. During winter, they eat mostly fruits and berries. Thus, their annual feeding pattern makes them beneficial to agriculture since they rarely feed on cultivated crops.

In nature, competition for food and space is keen. For bluebirds, with nesting sites already limited, competition with other native species may become acute. Tree swallows are abundant everywhere in Montana, and they favor the same nesting sites as bluebirds. Violet-green swallows, rough-winged swallows, chickadees, nuthatches, wrens, kinglets, chipmunks, and even mice compete with bluebirds for nesting sites. Add the house sparrow (sometimes called "English" sparrow) and starling, both of European origin, and a picture of oppressive competition emerges.

House sparrows were brought from Europe in 1853 and introduced in Brooklyn, N.Y. They quickly adapted to their new surroundings and spread rapidly, soon becoming common throughout most of North America. The persistent and aggressive house sparrow often evicts the native bluebird from preferred nesting cavities. However, house sparrows are not restricted to cavity nesting, as bluebirds are. So, they thrive in any environment where adequate food is available, particularly around settled areas.

Starlings are the second half of the alien threat to bluebirds. Late in the 19th century, several attempts were made to introduce starlings into North America. Introductions in Quebec, Oregon, and Ohio all failed, for unknown reasons. But in 1890-1891, a bird lover named Eugene Schieffelin released 80 pairs in New York's Cen-

tral Park. They thrived, and by 1960 had spread to the West Coast. Because it also nests in cavities, the larger and more aggressive starling can completely eliminate bluebirds from any cavity big enough for it to enter.

The starling is a double nemesis to bluebirds. Not only does it usurp nesting sites, but it also competes with bluebirds for winter food. Bluebirds largely depend on various kinds of wild berries in the winter, but starlings inhabit these bluebird wintering areas year round. Consequently, many trees and shrubs which provide food for wintering bluebirds may be stripped of berries by starlings before the bluebirds even arrive.

The lesson here is that potential long-term effects must be considered before introduction of alien wildlife species. Both the house sparrow and the starling are liabilities to American agriculture as well as to wildlife. Such introductions should not be attempted unless it is clear the new species will provide definite benefits without adverse effects on native wildlife.

There are other reasons for declining bluebird populations. As mentioned already, early settlement undoubtedly helped the bluebird. But more intensive settlement caused bluebirds to lose some previous gains. Trees which provided nesting cavities were cut for firewood, and the younger trees that replaced them had fewer cavities. In addition, wooden fence posts have often been replaced by steel fence posts, thus further reducing available bluebird nesting sites.

Certain pesticides, such as chlorinated hydrocarbons, can kill birds through direct contact with high concentrations. At lower dosages, birds may gradually build up lethal pesticide levels in their systems via the food chain. Such accumulations may not always cause death, but may result in decreased breeding success or aberrant behavior which predisposes the victims to an early death by other means. Insecticides may also reduce local populations of insects so it becomes difficult or impossible for species such as bluebirds to adequately feed their young. Fortunately, many of the "hard" pesticides have been banned and several species of impacted birds are beginning to respond positively. However, presence of such chemicals in Montana waterfowl reminds us that continuing vigilance is necessary.

Bluebirds face many of the same problems in avoiding predation as other potential prey species. An impressive list of native predators finds adult bluebirds, their eggs, or their young, quite palatable. One of the most insidious predators is the common house cat (which, like the starling, was brought to America by man). House cats may be cute, playful, and friendly at home, but they can be efficient predators afield. Their patience and cunning, coupled with the bluebirds' ground-foraging habits, create a treacherous situation. Weasels, snakes, and wrens also prey on young or eggs in nests. When nest boxes are used, some of these problems can be avoided through careful selection of sites.

Results from placing nest boxes (right photo: Duncan G. Mackintosh) for bluebirds have been impressive. Since bluebirds forage on the ground to secure food for their young, the boxes should be placed in areas with short grass. A female mountain bluebird (below photo: Bryan R. Shantz) brings food to her young.

They are quite productive and generally raise from four to six young per brood. Most bluebirds will produce two broods of young in a single season, with second broods slightly smaller; under unusually favorable circumstances, some bluebirds may even raise a third brood!

The bluebird's decline in North America was hardly noticed by some, but others, who had thrilled to the sight of these beautiful harbingers of spring, became deeply concerned. In an effort to halt the downward trend, concerned conservationists began to take action. An obvious first need was for nesting sites to replace those lost to man's activities or to introduced birds. The solution was placement of nest boxes in suitable habitat, and early "bluebirders"—as they call themselves—found that rapid results could be obtained. Enthusiasm begets enthusiasm. Successes by early bluebirders, such as Dr. Larry Zeleny, encouraged others to take up the cause. In 1978, the North American Bluebird Society was formed for the

express purpose of fostering bluebird conservation. The Society publishes a quarterly journal, *Sialia*, which serves as a forum for bluebirders as well as a source of news and information.

In Montana, efforts at bluebird conservation were limited until about 1974. Before that, only a few persons in the state put out and maintained nest boxes. Wendell Stevens, Paradise; John Shima, Polson; Conrad Malinak, Hot Springs, and Winton Weydemeyer, Eureka, have all been active in bluebird conservation for at least 30 years. They and others who maintained a few boxes on their property may have helped to limit the decline of Montana's bluebird populations.

In 1975, one of the authors (Aylesworth) organized large-scale box production and distribution. To date, over 5,500 boxes have been placed. Most of these are in western Montana, but some have been placed near Glasgow, Billings, Great Falls, and Helena. Sawmills in western Montana provided cedar trim boards. Shop classes at Ronan High School, directed by Dave Edington, produced most of the box parts. Volunteers, using modern air nailers, assembled the boxes.

Fastened to posts or poles, nest boxes have been put out in "trails," from only a few to several hundred boxes in a given trail. Results are impressive. In just five years, bluebird populations in the Superior, St. Regis, Plains, and Ronan areas have increased to the point they can almost be considered common. Most are mountain bluebirds, but a healthy core of western bluebirds occurs around Plains, with some additional westerns found near St. Regis.

An important link in the Plains-Thompson Falls area is an energetic lady named Deni Hershberger—the premier bluebird conservationist of Plains. Over the past several years, she has skillfully placed and maintained hundreds of boxes—and everyone she meets is quickly encouraged to put out and maintain at least a few bluebird houses. Her enthusiasm is boundless and she approaches her hobby with a loving care that demonstrates her dedication.

Results of nest box efforts are recorded in order to track successes and failures of the program. During 1982, 1,038 young bluebirds were fledged from boxes in western Montana. This compares to 419 in 1979, 224 in 1980, and 305 in 1981. Banding of young bluebirds began in 1981 with 250 banded. Only four returning birds were seen in Montana in 1982, but some apparently move to other areas. One was located near Pinehurst, Idaho, 100 air miles from the banding site.

With a blossoming regional interest in bluebirds, it was only natural that a regional organization would be formed. In 1981, Mountain Bluebird Trail was organized, with Duncan Mackintosh of Lethbridge, Alberta, as president. This organization extends to Montana, Alberta, and northern Idaho. Through presentation of slide shows and dissemination of information, Mountain Bluebird Trail helps interested people and organizations successfully care for bluebird trails.

Persons interested in the bluebird cause can help by building and maintaining a trail of nest boxes. Not only are these boxes effective for bluebirds, but they also are very helpful to many other native species of cavity-nesting birds. Costs are minimal, and young and old alike can participate.

In establishing a bluebird trail, no less than five and perhaps as many as 25 boxes should be used. If an area does not now have active nesting bluebirds, begin in an area where the best habitat exists and gradually "lead" the birds to the desired area with a trail of boxes. It is also essential to use nest boxes constructed according to a tried and proven design and to clean the boxes at least once a year.

The following is a list prepared by Mountain Bluebird Trail of do's and don'ts for placement of bluebird nest boxes:

DO:

- Select areas adjacent to streams and rivers, especially near cliffs and clay banks.
- Place boxes in pastures or short grass areas. Remember, bluebirds forage on the ground to secure food for their young.
- Use single trees in areas where trees are 100 yards or more apart and squirrels are absent.
- Use home and yard areas such as summer homes, cabins, etc., if occupants do not keep cats. Bluebirds like people, especially children.
- Request permission to place boxes on telephone poles, golf courses, in cemeteries, and on other private property. If you use telephone poles, face boxes parallel with the line.

DON'T:

- Place boxes near summer fallow or wheat crop areas—no feed and danger of spraying.
- Place boxes in heavily timbered areas.
- Mount boxes near thickets of rosebushes, chokecherry, or wild roses. Stay at least 150 yards from such thickets because this is house wren habitat and they destroy bluebird nests.
- Use areas close to stagnant ponds and swamp areas because tree swallows will claim houses.
- Place boxes near farm buildings or feedlot areas, because of cats and sparrows. Place boxes at least 300 yards from these areas.

Blueprints for nest boxes are available, and information can be obtained from sources presented in the accompanying sidebar. ■

Starting a Bluebird Trail

The authors hope that readers will become interested in developing bluebird trails in their communities. The following people have successful box trails and are willing to share box plans and other information with those concerned with bluebird conservation. In some instances, boxes will be available at cost. Contractors, sawmills, and lumberyards are sources of used material, trim boards, and cull material that would otherwise be burned or destroyed. Private conservation groups or service clubs sometimes contribute funds for supplies. High school shop programs find box-building an excellent student project. When contacting anyone on the following list, *please include a stamped, self-addressed envelope.* Those available for assistance and information through the Mountain Bluebird Trail:

Barbara Hansen, Box 1137, Glasgow, MT 59230; Verne Sebens, Box 1589, Great Falls, MT 59403; Jack Woodworth, Box 913, Lewistown, MT 59457; Harold Koontz, Box 1818, Billings, MT 59103; Art Aylesworth, Box 794, Ronan, MT 59864; Deni Hershberger, 439 River Road, Plains, MT 59859; Harold Knapp, Missoula County High School, Forestry Department, 3110 South Ave., Missoula, MT 59801; Dick Hinman, West Shore, Polson, MT 59860; Ev Lundgren, Box 398, West Glacier, MT 59936; Bob Greene, Game Farm, Warm Springs, MT 59756; John Delano, Box 1172, Helena, MT 59601; Tom Matsko, Box 2405, Great Falls, MT 59401; Elizabeth Kehmeier, 14 Wyant Lane, Hamilton, MT 59840; Duncan Mackintosh, 1719 Ninth Ave., Lethbridge, Alberta T1J 1W8, and Clarence Hagerman, Pinehurst, ID 83850.

Additional information is also available from the North American Bluebird Society, Box 6295; Silver Springs, MD 20906.

TRIPPING ON WHEELS

Author Gretchen Olheiser at the high point of last summer's bicycle tour through the Seeley-Swan area with her father (and photographer), George W. "Shorty" Huber.

by Gretchen Olheiser

STANDING perfectly still with 20 feet separating us, the three of us eyed each other. On our part at least, there was no fear—only awe, respect, and admiration. It was apparent the strawberry roan-colored black bear didn't judge us worthy of his awe or respect or even his consideration. After a brief glance at us, he turned and ambled back into the forest understory of fern and dogwood that typifies the vegetation of the beautiful Seeley-Swan area of western Montana.

We kicked our pedals around and started the pumping that brought us to this wild encounter.

Bicycle touring is an adventure with nature. The biker is not a foreigner passing through, but a part of the heart and soul of the outdoors.

But the wonder of accomplishment—of actually propelling oneself to a distant point—must be preceded by a certain amount of preparation.

Select equipment suitable to your needs. Basic to the enjoyment of bike touring is the bicycle itself. The bicycle is a most efficient machine, requiring a minimum of effort for a maximum of movement. However, for a comfortable ride, it must fit *you*. Simply hopping onto any multiple-speed bike will not do. You should be able to stand, straddling the center bar, with about an inch to spare. When seated, your leg should have a slight bend at the knee when the pedal is at its lowest point.

Bike touring in Montana requires a gear ratio low enough to get you over the mountain passes and high enough to cover the stretches of level, or near level, terrain with speed and ease.

Take a good look at the saddle (or seat) of the bicycle. Spend a few extra dollars, because this is the spot on which you'll be spending a lot of time. A sheepskin seat cover is a wise investment, even if you have a quality saddle.

It is essential to be able to see what is behind you. Rear view mirrors come in an assortment of types—small mirrors clip onto glasses frames or onto a helmet; larger mirrors strap onto the biker's wrist or fasten to the bike handles.

Black chamois-lined biking shorts are not glamorous. They are long, coming nearly to the knee, and fit tightly. But what they lack in beauty, they make up for in comfort. More attractive styles are available, but the length and snugness of the traditional shorts serve a purpose—they don't ride up, so they don't chafe. Whatever style of

pants or shorts you choose for biking, avoid thickly seamed jeans. They become very uncomfortable when you have to sit on the seams for long periods of time.

Biking gloves and a safety helmet round out your specialized touring wardrobe. The gloves are usually fingerless with a heavily padded leather palm. The padding helps absorb road vibrations that can cause numbness in hands and arms. Montana law does not require a helmet, but it makes good sense. If your helmet is the type with an open top, or if you choose not to wear a helmet, you should wear a hat to protect yourself from the sun or from temperature loss (hypothermia) in cold weather.

The rest of your clothing can come right out of your closet and depends on the time of year you'll be touring. Visibility is a key—choose bright colors easily seen by motorists. Include rain gear and remember that changes of underclothing and extra socks take little space.

This brings us to the bike tourist's "luggage." Panniers (saddlebags) can be attached to front and rear carrier racks mounted on your bike. You should try to balance the weight carried on each side and distribute it by carrying approximately 60% on the rear and 40% on the front.

Pack your clothing in plastic bags and then roll them up. Standing the rolls of clothing on end in the panniers will help you find specific items quickly. Take along an empty plastic bag or two for dirty clothes, litter, or whatever (you can always put one over the seat if you have to leave the bicycle outside in the rain).

First-aid items and personal toiletries are essential. You might need eyedrops because of road dust, and hay fever pills may be the difference between enjoyment and misery. Remember to take a handkerchief. If you're traveling along waterways, it's probable you'll need insect repellent. Try to think ahead—know yourself and your personal needs. Bike touring is fun—it shouldn't be reduced to a fight for survival from dust, pollen, bugs, or a runny nose.

It is very important to drink water periodically. A good rule of thumb is to stop every hour for a drink of water—drink even if you don't feel thirsty. Dehydration can rob you of energy and leave you weak and dizzy.

Biking requires fuel, and fuel is provided by what you eat. A nutritious high-energy granola type food suitable for touring is "gorp." Gorp is individualistic—with almost as many varieties as there are bikers. Almost everyone has a favorite recipe:

Gorp

1 c old-fashioned oatmeal
½ c shredded coconut
¼ c wheat germ
¾ c walnuts, chopped
½ t salt
1 c sweetened condensed milk
2 T vegetable oil

Mix thoroughly. Spread on shallow baking sheet treated with a nonstick spray, or use waxed paper. Bake at 300° for one hour, or until golden brown. Stir occasionally. Remove from oven. Cool slightly. Put mixture in large bowl.

Add:

1 c candy-coated chocolate bits
1 c salted peanuts
1½ c raisins

Mix well. This will keep for a long time if stored in an airtight container.

It is not necessary to munch gorp continually or even to eat some at every water stop. But from time to time—maybe every two to three hours—have a few handfuls. You'll be surprised by how many MPG (miles per gorp) you can get.

Don't substitute gorp for all meals. Begin your day with a nutritious breakfast and finish it with a satisfying dinner. But in between, gorp is a quick and easy source of fuel.

Bananas also provide bikers with staying power. High in nutrition, the banana's real claim to fame is its potassium content. Like salts and water, potassium is lost through perspiration, so replacing it will avoid the fatigue related to its loss.

Because of the distances between populated areas in Montana, you may find it necessary to camp out along the way. Camping adds depth to the sense of accomplishment. But you're no less a bike tourist if you leave your tent, sleeping bag, and camping gear at home. Just be sure to organize your trip in detail if you do not plan on carrying camping equipment. Being tired and ready to call it a day, with three or four more hours of riding ahead to the nearest motel, can be disheartening. Be prepared to camp out—just in case. The added weight doesn't make that much difference; in fact, it's surprising how much you can easily carry on a bike.

Camping gear should be simple and basic. A small tent with rain fly, a comfortable sleeping bag, and eating utensils are the basics. You may want to add a sleeping pad, a small (backpack type) stove, and a flashlight.

Knowing the bike-related laws for the states through which you travel will save (at best) embarrassment and (at worst) a fine. In Montana, unless a bicycle path or lane is provided, you must ride single file as far to the right as possible (61-8-605 MCA). If a separate bicycle path is provided along a roadway, you must use the pathway. In Montana, you may ride on the interstate highway system. Also, the law requires reflectors and lights if riding at night.

A positive attitude is as essential to bike touring as handle bars. Without it, you're defeated before you start. "Oh, I couldn't do that" translates into never trying. And without trying, you miss the adventure and the thrill of accomplishment.

Besides a positive attitude, some physical training is necessary. Begin a gradually increasing training program four to five weeks ahead of your departure. Ride from 30 minutes to an hour, three to four days a week (an easy way to accomplish this is to commute to and from work). Set aside one day a week for a long ride. Begin with a 10- to 15-mile ride (about an hour or hour and a half); then weekly increase it to around a 50-miler for your last training ride.

The key to training is regularity—keep at it, a little at a time. Your legs, back, arms, neck, and above all (or rather, beneath all) your bottom, will adjust to the demands you'll be making on them.

Another necessity of bike touring is a sense of humor. It would be misleading to say that every instant of a long ride is joyful. Bugs, rain, and discourteous drivers keep everything in perspective—like the shadows in a painting. If you can't enjoy yourself and laugh at minor discomforts, you'd better stay home.

Interested, but unsure how to start? The bicycle shop nearest you can provide names of bikers or information about the local bike club. Bikecentennial (P.O. Box 8308; Missoula, MT 59807) is a national touring organization headquartered in Missoula. Its brochures are very useful. The Office of Public Instruction offers a bicycling education program, which includes instructional material, a curriculum guide, information about repairing bicycles, and other items. To obtain material, contact: Spencer Sartorius, Office of Public Instruction, State Capitol; Helena, MT 59620. Or, write to the Parks Division, Department of Fish, Wildlife and Parks, 1420 E. Sixth; Helena, MT 59620.

The next time you're planning a trip, consider using a bicycle. The distance you cover may be less, but the satisfaction and enjoyment will be far greater.

See you on the road! ■

THERE WOULD BE NO CHARGE

WHEN LOW November clouds rolled in four months out of season, an April early morning pressed a cold palm to an awakening earth. I heard the honkers flying low, just above the trees, moving fast, talking faster. It was the communal April caravan, following an unmarked, uncluttered gypsy path. The pairs were mated for life, the long wings mated to the sky, the "V" the geometry of an inborn, forever constant equality.

I returned to my small ovens where twice-raised white loaves browned off on top. Half-rolled-out pastry for the cinnamon rolls lay on my cutting boards. In the 20-quart dented and greased aluminum pot, yeast cells divided, multiplied, and fermented, wherever contact with the honey sugar released its primitive and perfect energy.

The sunrise yellow haze gleamed on the dewfrost that had settled on the post and pole fence outside my back door. I left my breads and leaned my elbows on a post and put my head in my hands. I looked up and still the big birds, staying low, still flying, headed north to the watersheds and potholes where few men live, where few men dare contemplate the complete and total isolation. Thousands of the birds, thousands, all cousins, all family, flew above the trees, flying to where time passes in shades of crescent moons and is permanently logged by Orion's almost imperceptible migrational flash across the sky.

I knew I would be late with my bread deliveries that day. Any attempt at an explanation to my employer would sound foolish. For today's deliveries, there would be no charge. ■

by Jeff Taylor
etching by Mike Hollern

Department Lands:

JUDITH RIVER WILDLIFE MANAGEMENT AREA

Judith River Wildlife Management Area (DFWP photos: Bob Varner)

THE OLDEST of the state's elk winter ranges, the Judith River Wildlife Management Area (WMA) is situated in central Montana, approximately 11 miles southwest of Utica (see map). The Lewis and Clark National Forest borders it on the south and west. The original 232 acres was purchased in 1938 by the Department of Fish, Wildlife and Parks under the Pittman-Robertson Act. The 1,004 acres

by Bob Varner

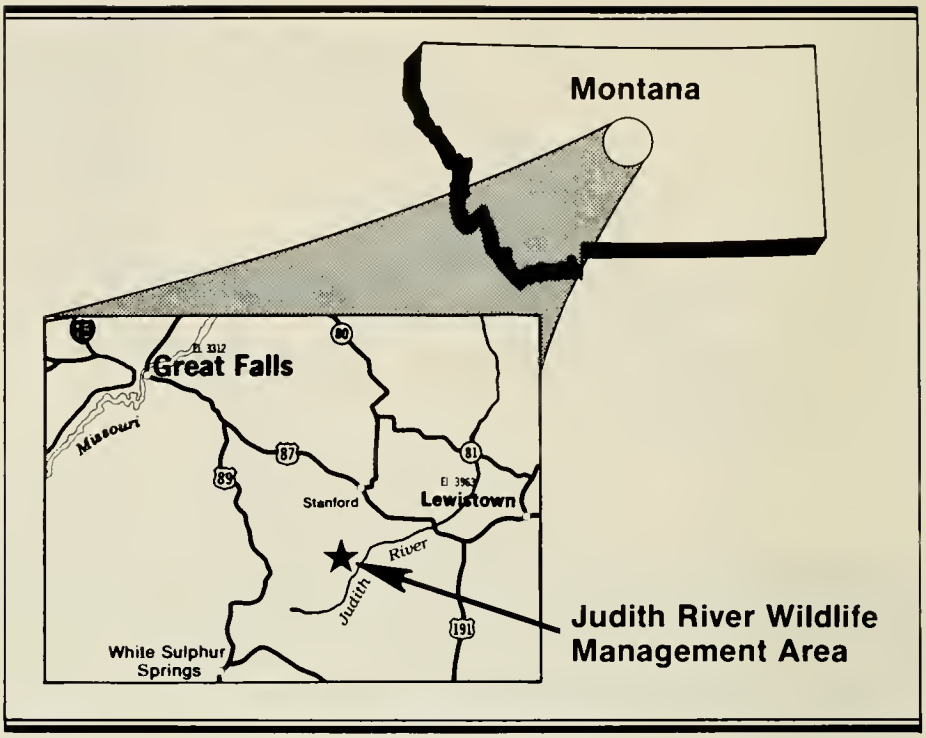
acquired in 1940 became the nucleus of the present area; other important additions were made in 1950, 1952, and 1958. Of the area's present acreage, department-owned lands total 4,910 acres, while public lands comprise 446 acres.

The area provides winter forage for 700 to 800 elk, about 80% of the elk in the Judith River drainage from December through May. This herd is one of the most heavily hunted in the state—its general bull season and its proximity to Great Falls, Billings, and Lewistown guarantee a large number of hunters. For example, Elk Hunting Districts 418, 420, 448, and 454 provided 29,319 days of recreational hunting during the 1981 season.

Before 1975, unmanageable numbers of hunters and vehicles on the management area and adjoining private land to the north had caused range damage and other problems for landowners. To ensure that these private lands remained open to public hunting and to prevent further range damage, the department created the Judith River WMA-Tepee Butte Special Management Area. Vehicle use is restricted to key access points, with hunting on foot or horseback, and both hunters and landowners have accepted the special management plan.

Before the department purchased the area, approximately 1,200 acres was seeded to brome and crested wheatgrass by ranchers for livestock feed. However, these grasses were unused by elk, even during severe winters. During the past 10 years, most of the areas have been reseeded to forage species more palatable to elk and thus have greatly increased the amount of forage available to elk. Presence of this forage has relieved use on native grasses on the area.

A county road leading to Yogo Gulch and the patented claims of the Yogo Sapphire Mine bisects the Judith River WMA. Proper utilization of elk winter range has been adversely affected by human activity along this road and on the mine property. When weather has restricted travel on the county road during winter, elk distribution has been excellent. This results in light use of vegetation over the entire area. The opposite has occurred when travel and human activity have been frequent. The elk either remain



near cover, with subsequent overuse of key range, or move to more secure cover on private land to the north. For this reason, all off-road activities, including cross-country skiing, hiking, and snowmobiling are restricted from Dec. 1 to May 15 on the management area.

While the Judith River WMA lacks some of the diversity of the larger wildlife management areas in Montana in terms of wildlife species and outdoor recreational opportunities, it provides 3,000 days of nonhunting recreation annually. As a public hunting area, it is very popular and has provided an average of 6,662 hunter days per year over the past 12 years.

The Judith River WMA has demonstrated that a relatively small, but strategically located, project can make a large contribution to both wildlife management and to other forms of public recreation. ■

• *This is the first in a series of articles on department-managed lands—recreation areas, fishing access sites, historic monuments, wildlife management areas, etc. Watch future issues for other installments in the series.*—Ed.

Wildlife Shorts

Because of its common name, "mountain beaver," *Aplodontia rufa* is sometimes confused with the beaver which inhabits Montana, *Castor canadensis*. The mountain beaver appears from northwestern California to southern British Columbia. It is not closely related to beaver found in Montana, but instead is chunky, virtually tailless, and almost as large as a muskrat.

* * * * *

The jumping mouse is distributed over most of the United States. As its name implies, it frequently uses jumping as a means of escape. With a couple of froglike jumps, it vanishes into its preferred habitat, grassy mountain slopes, in a matter of seconds.

* * * * *

The snowshoe rabbit is well-named. Its hind toes spread to form a broad snowshoe-shaped track. When the toes spread, they cover a greater surface area. This causes the rabbit's weight to be more widely distributed so it doesn't sink into the snow while searching for food or fleeing a predator.

* * * * *

The coyote *(Canis latrans)* is also known as the "brush wolf" or "prairie wolf."

* * * * *

In some Mediterranean countries, small songbirds are regularly marketed as food. Some of the small finch species have been sought as game in Europe for centuries.

* * * * *

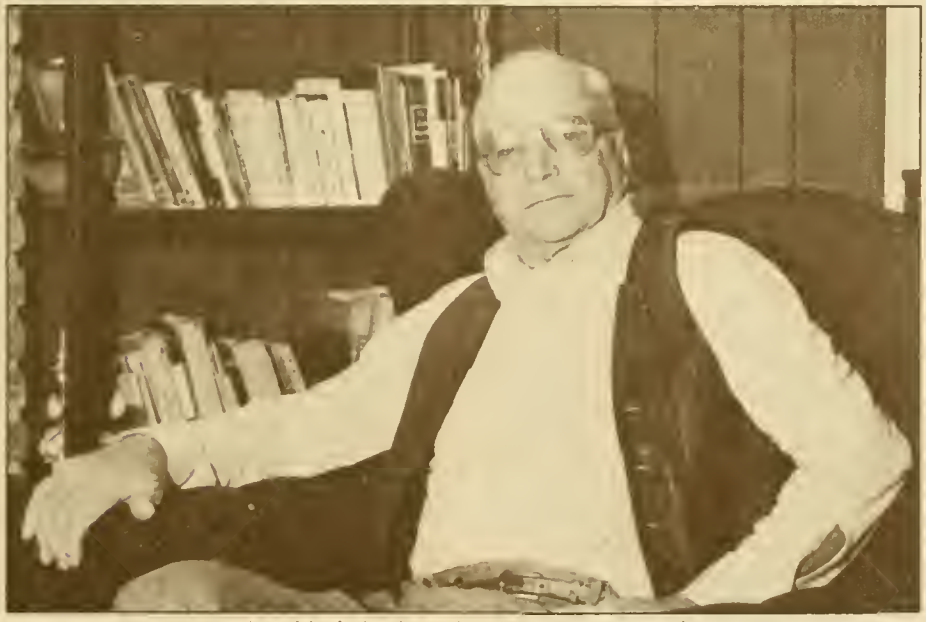
When a deep sea fish that has a closed swim bladder is caught and hauled up in a net, the fish will literally explode in the low pressure water near the surface.—*Vince Yannone, youth educator, Conservation Education Division*

Arnold Rieder: A Profile

• *These days, it is pleasant to read a story about someone who has "made something" of his own life and, in doing so, has enriched the lives of many others. Arnold Rieder is such a person. Arnold wears (and has worn) many hats—rancher, sportsman, family man, legislator, Fish and Game Commissioner. But no matter which hat he had on, his love for the outdoors has always been evident. We think you'll enjoy the following "biography," pieced together by retired Fish, Wildlife and Parks employee Bob Cooney, who has known Arnold and his family for many years.*—Ed.

Arnold Rieder's entire life has been influenced by his love of the outdoors. From a boyhood in the mountains of Switzerland to a cattle ranch in Montana's Boulder Valley, life has been a long and interesting journey for this capable, pleasant, and kind man.

Now in his mid-70s, I'm sure he looks back with great pleasure on those years. They were not easy, but he lived them with a zestfulness that has always been an important attribute.



Arnold Rieder (DFWP photo: Tom Warren)

When he was 6, he came to the United States with his family. They settled on a small farm near Peoria, Ill., on the edge of the Illinois River. Later, young Arnold ran a trap line, before and after school, to supplement the rather meager family income. He also hunted cottontails, a welcome addition to their food supply.

Along with learning a new language, Arnold was also expanding his knowledge of the outdoors. This early interest provided a pattern for outdoor activities he has enjoyed ever since.

During his school years in East Peoria, he became very active in sports, especially basketball. He worked in a garage for several years, but found he was developing an increasing desire to head West.

He was 22 in the spring of 1928 when he found a job on the 35,000-acre Double O Cattle Ranch near Burns, Ore. This property was being sold to become part of what is now the Malheur National Wildlife Refuge. Arnold was delighted to find his work included helping to enhance the wildlife values on the ranch during the five years of its transition to the refuge.

The time he spent out on the marshes with Dr. L. E. Hibbard, a member of the Oregon Fish and Game Commission, was pleasant and rewarding. They spent countless hours putting in willows and waterfowl food plants.

Dr. Ira N. Gabrielson, former director of the U.S. Fish and Wildlife Service, visited the area during the years Arnold worked there. J. N. "Ding" Darling, who actively initiated the refuge program as chief of the Bureau of Biological Survey, also came out to the Double O on a swing through the West. It is probable that some of the enthusiasm of these early conservation leaders rubbed off on Arnold.

He spent a great deal of time alone, working out of what he called the "swamp camp." He put in miles of foot and horseback patrol, in addition to the work with food and cover plants. He said he doesn't recall ever being lonely. Ducks, geese, and swans were abundant, along with a variety of other marsh birds and animals. The great fall and spring waterfowl migrations with their tumult of sound are still vivid memories for Arnold.

His work was completed in 1934, when the ranch finally became part of the refuge. He returned to East Peoria and married his boyhood sweetheart, Floy Crabtree. He operated a garage for about seven years, but couldn't forget his love of the West.

In 1942, he and his family came to Montana and purchased a pioneer cattle ranch in the Boulder Valley. Arnold smiled when he said, "It was in pretty bad shape when we got it. A lot of the fences were down and in some places old hayracks and rakes had been shoved in as gates." With much hard work, it has become a successful family ranch.

Among his many interests, Arnold numbers his affection for dogs. He used to enjoy running mountain lions. But he noted, "I wasn't very keen on taking any of these fine animals. It was just fun to be out there in the hills in the wintertime."

He enjoys recounting one of his first lion hunts. He was in the Elkhorns with an old-time hunter and trapper friend, Roy Murrey. The snow was pretty deep, and it was getting late in the afternoon. Arnold said, "I think we better be heading back." Roy replied, "I don't think we're going back. We'll just build a fire and sit around it all night."

The presence of elk and deer near the ranch has surely been one of the reasons Arnold and his family have enjoyed living there so much. For the first 20 years, Arnold said he didn't miss a season of hunting. But when

his boys got big enough to bring in game, he eased off and put in more time fishing.

Arnold has always believed that youngsters who explore the outdoors through hunting, fishing, and hiking are much less likely to get into trouble. This deep interest and concern for young people has shown up in many ways throughout Arnold's life. He served on the local school board for a number of years while his and Floy's two sons and two daughters were growing up. During the years his children were involved in basketball, he and his wife—along with many neighbors—would follow the teams, even in the dead of winter. Since one of their sons has been a coach and their daughters have married coaches, there are still many trips to the games.

In 1951, Arnold was persuaded to run for the Legislature. "At that time," he said in jest, "I was so busy on the ranch trying to get out of debt, I hardly knew where the Capitol was." He went on to serve eight years in the House and eight more in the Senate. He cites membership on the Fish and Game committees of both the House and Senate as highlights of his legislative years.

During the 1957 session, he developed and sponsored a bill that, when passed, became the Hunter Safety Act. He said he had a lot of help with the legislation and mentioned, among others, the late Ken Thompson, then in charge of the Information and Education Division of the Fish and Game Department. Arnold has been pleased with success of the program, which makes it necessary for young people to pass a comprehensive hunter safety test before obtaining their first hunting license. He feels a great deal of credit should be given to the highly dedicated volunteer instructors all across the state.

Another highlight of Arnold's active public life was a five-year assignment (1970-75) to the Montana Fish and Game Commission. His experience as an outdoorsman, rancher, and legislator helped him with this challenging work.

For the past several years, he has been actively helping to preserve the wild character of the Elkhorn Range he knows so well.

He said he has retired from the ranch and has turned it over to his son Dave. Those of us who have noticed his frequent early morning trips from home in Helena to the Boulder Valley have a feeling that he can't quite break away from the ranch life he loves so much. He recently had a little bout with some heart trouble, but is up and going again. "Over there at the ranch," he likes to say, "I'm working on my third saddle."

Arnold Rieder has given a great deal of himself to Montana, particularly to the state's young people. Surely, it is people like him—so generous with their time and efforts—who make this a pleasant place in which to live and raise children and grandchildren. By the way, Arnold and Floy have 12 grandchildren who are already evidencing a love of the outdoors. How could they do otherwise?

So, Arnold, this is in no way the end of a story, but more like the beginning. All the young lives you have touched along the way will go on, much the better for what you have given them.—*Bob Cooney*

It doesn't take an advanced degree in wildlife biology to figure out that the prairie country near Ekalaka isn't exactly prime habitat for moose. Yet Mrs. Bill Ludwick, who ranches with her husband near Ekalaka, captured these two bull moose on film in October 1982. She took the photo from her kitchen window, using a telephoto lens. Ken Walcheck, information officer for the department's Miles City region said, "To the best of our knowledge, this is the first time moose have ever visited this part of southeastern Montana. Where they came from is anybody's guess."

Tribute to Carl Nebil

A good friend passed away recently, and I'd like to tell you about him. Carl Nebil came to Montana from Wisconsin in 1970. He worked at the St. Labre Mission in Ashland as science teacher and also as a teacher of the Northern Cheyenne culture. He especially loved the children at the mission and his front yard was a playground of traditional Cheyenne games.

"Neebs" was also an outdoorsman. He loved the Tongue River and spent many hours on its banks, coaxing the wily smallmouth bass to strike his careful presentations. He showed the educated fisheries biologist where the bass were, at the expense of his favorite fishing holes, because he knew that the troubled waters of the Tongue needed all the help we could give them. He taught the children to appreciate the Tongue River and the beautiful lands it passed through. He brought them to the banks of the river to observe the fish and the river, and they loved him for it.

Carl stood for what is right—protection of cultural traditions, and protection of land and water. We all lost a friend when Carl left. This man's river truly runs deep.—*Chris Clancy, fisheries biologist, Livingston*

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Klabunde Memorial Scholarship Fund

A scholarship fund has been established in memory of Joe Klabunde, former chairman of the Montana Fish and Game Commission and long-time commission member. The fund will assist Montana State University students in the fields of fish and wildlife management.

Mr. Klabunde died in January 1982. He was well-known for his work in behalf of Montana's wildlife and sportsmen.

Contributions may be sent to: First Citizens Bank of Bozeman, P.O. Box 578; Bozeman, MT 59715.

Contributors

• "With the Sky on Their Backs" is the story of an attractive colorful, and appealing member of the thrush family: the bluebird. Three species are unique to North America, with two of those regularly found in Montana. When early settlers cleared land for farming and cut forests for timber, the bluebird benefited because open habitat was created. Wooden fence posts, large stumps, and, later, power poles became available for excavation as nest sites by woodpeckers, and, in turn, for use by bluebirds. But recent times have been less favorable for bluebirds in North America. To learn what some "bluebirders" in Montana are doing to increase the number of nesting sites for bluebirds, turn to **Dennis Flath's** and **Art Aylesworth's** article on page 2. Flath is the department's nongame biologist and works from the Wildlife Division's Research Laboratory in Bozeman. Aylesworth is an independent life insurance agent in Ronan; he is a director for the North American Bluebird Society.

• If you've always wanted to take a bicycle tour, but weren't exactly sure how to go about it and what to take along, turn to "Tripping on Wheels" on page 6. **Gretchen Olheiser** provides guidelines for selecting equipment suitable to your needs, clothing suggestions, a first-aid list, and even her personal recipe for "gorp," a high-energy snack that provides bicycle tourists with staying power. A runner, downhill skier, tennis player, fisherperson, and casual biker, Olheiser reported that assignment of this article prompted her to make her first bicycle tour—through the Seeley-Swan area to Kalispell, with her father, George W. "Shorty" Huber. She is chief of the planning and project bureau for the department's Parks Division.

• **Jeff Taylor** wrote "There Would Be No Charge" while he was an independent baker in Missoula. We think *Montana Outdoors* readers will enjoy sharing his observations of a crowd of honkers, flying low, early on an April morning. Taylor now teaches English at Browning Junior High School. His writing has previously been published in literary journals outside of Montana. His article appears on page 8.

The etching illustrating Taylor's article was done by **Mike Hollern**, Cascade. He has been working as a full-time artist for about five years and does etchings only. He has studied with Jeff Walker, whose work has appeared often in *MO*. Hollern's pieces have been donated to Ducks Unlimited and sold through the annual Russell Auction in Great Falls. To contact him, write P.O. Box 68; Cascade, MT 59421.

• "Judith River Wildlife Management Area" (WMA) is the first in a series of articles on department-managed lands. The Judith River area is the oldest of the state's elk winter ranges and provides winter forage for 700 to 800 elk. As writer **Bob Varner** points out, "This herd is one of the most heavily hunted in the state," partially because of the area's proximity to Great Falls, Billings, and Lewistown. Varner is manager of the Judith River WMA and has been obtaining management information for the department on this elk herd for over 25 years. Turn to his article on page 9.

• "Along the Yellowstone: A Personal Reminiscence" is exactly what the title indicates it is. But it is also the recollections of a woman with a deep love for the Yellowstone and an equally deep concern about its future: **Mary Dawe Lowry.** Her parents were married in 1895 at the Old Jordan Hotel in Glendive. They operated the Circle Arrow Ranch, not far from Lambert, during the late 1800s. They then moved to a farm at the north edge of Sidney; they had four children, three girls and one boy, of which Mary was the youngest. She grew up in Sidney, studied journalism, and, in 1926, married William Lowry. She and Mr. Lowry had six boys, and she now has 18 grandchildren and 10 "great-grands." She continues to enjoy writing about her family, making quilts ("I have another one ready to put together now; at last, I'll have one for my own bed"), and helping at the Senior Citizen's Center in Savage. Her warm reminiscence begins on page 15.

• *MO* is pleased to welcome the work of **Michael R. Matherly**, whose drawing illustrates "Turkey Hunting Can Be Hazardous to Your Health," by **Donald M. Garver** (page 24). A wildlife artist living in Richmond, Ind., Matherly studied for two years at the Dayton Art Institute, but is otherwise self-taught. He formerly was a commercial artist and began doing wildlife art about two years ago. He travels extensively in the United States and Canada gathering reference material for his work.

• How much have Montana's landscapes—and wildlife habitat—changed since the days of early settlement? To find the answer, turn to "Montana's Changing Scenes" on page 27. Author **Jim Lotan** selected nine photo comparisons to illustrate changes that have occurred since roughly the turn of the century. They cover areas all over Montana—from the Ekalaka Hills to a pond near Flathead Lake. The nine photos appearing in this issue of *MO* are part of a photo comparison of 86 locations, collected by George Gruell, U.S. Forest Service wildlife biologist at the Intermountain Forest and Range Experiment Station's Northern Forest Fire Laboratory near Missoula. The photographs show that the topography is relatively stable, but the permanence of the vegetation that clothes these hills—and upon which wild and domestic creatures feed—is something else again. Lotan is a research forester with the Northern Forest Fire Laboratory.

• **Takehiro Taira's** compelling painting of a weasel in its winter camouflage illustrates **Vince Yannone's** article, "Nature's Mousetrap" (page 32). Takehiro's work has appeared frequently in *MO*, and the weasel painting reflects some new elements in his technique. He says: "In my paintings now, you will see interesting shapes and forms of nature, with animals as part of it—not just pictures of animals. My style is realism. I want to capture a three-dimensional quality, and I want the viewer to feel the depth and space behind the animals." For more information about his work, contact him at 2757 Highway 93 S.; Kalispell, MT 59901.

• "Conservation Easements" can provide "Protection for Critical Winter Range." Turn to the article by **Bruce A. Bugbee** and **John B. Wright** on page 34 to see how this voluntary technique works. A conservation easement is a deed which conveys certain property rights—but not title—to the land. These rights are conveyed to a government entity, or to a tax-exempt conservation organization. Certain tax advantages are then available to donors of these rights. Bugbee is owner and manager of a Missoula-based land use consultant firm. Wright, his associate, also specializes in baseline studies for conservation easements.

• Special thanks to the following photographers whose work appears in this issue: **Mike Crider, Harry Engels,** Helena; **Diane Ensign-Caughey,** Whitefish; **George W. "Shorty" Huber,** Helena; Duncan G. Mackintosh, Lethbridge, Alberta; **Bill McRae,** Fairfield; **Bryan R. Shantz,** Red Deer, Alberta; **Tom J. Ulrich,** Fairfield, Ill., and **Steve Wirt,** Whitefish, and to department employees **Kristi DuBois,** Choteau, and **Ken Walcheck,** Miles City.

THE SCIENCE OF WILDLIFE MANAGEMENT:

The Future of our Wildlife Depends on It

Habitat

The foundation of the modern science of wildlife management was built on a new understanding of the interrelationships between animals and the natural areas that supported them. Wildlife management professionals came to realize that different species had specific habitat needs, including food, water, shelter and living space. With suitable habitat, a species' chance for success was excellent; however, additional growth of animal populations could be achieved only through enlarging or improving existing habitat.

In large measure, the recognition of the vital link between wildlife and its habitat provided, for the first time, the practical steps necessary to restore and maintain healthy wild animal populations.

By far, the greatest single threat to wildlife is the loss of prime natural areas. Irrespective of other conservation measures, without suitable habitat, no species of wildlife can survive. Today, our state wildlife agencies control and manage over 40 million acres of wildlife habitat. Many of these areas have been improved with plantings that provide food, nesting and protective cover for a wide variety of species. Such areas are open to all Americans, whatever their outdoor interest, to enjoy.

Over the years, it has been the American hunter who, through license fees and excise taxes, has provided the lion's share of the funds necessary for these conservation programs.

NSSF
National Shooting Sports Foundation
1075 Post Road
Riverside, Conn. 06878

A Personal Reminiscence:

Yellowstone River (DFWP photo: Kristi DuBois)

Along the Yellowstone

by Mary Lowry

• *The Yellowstone River, the longest free-flowing river in the lower 48 states, today provides abundant wildlife habitat and excellent recreational opportunities. It has survived the challenges of dams and unrestricted depletion only because so many Montanans care so deeply about the river.*

Mary Lowry is one of these people. Born near the lower Yellowstone in 1906, she freely admits that the mighty river is in her blood. She grew up and attended school in Sidney, and now resides in Savage. Her love for the river in all its moods and seasons shows clearly in the reminiscences provided in this article.—Ed.

IN THIS day and age, we are facing the possibility of losing some of the water volume of the Yellowstone River. Coal mining is on the increase, and energy companies are seeking increased amounts of water from the river.

I just want to state here a few of the reasons I hope it will not be changed. Selfish maybe, but I think we owe it to coming generations. When I look at my grandchildren and great-grandchildren, I worry that they will never know the beauty and majestic sweep of plains and rivers.

I was born just a few miles from the banks of this mighty river and I know well its boundless beauty, the strength of its unharnessed fury during spring breakup, and the flooding that usually occurs.

It is the happy memories that are uppermost in my mind, the things I grew up with, the joy of driving to the river on a Sunday afternoon after Sunday School and church services. Driving a spirited pair of horses with a light buggy was always a thrill, especially if Dad allowed me to sit on the front seat with him. Dad was always alert to any of God's miracles around us, calling my attention to the doe standing protectively in front of her fawns or the whir of wings as waterfowl or other game birds took off on our approach.

When Dad and others in our group practiced shooting at logs or other debris floating on the swift current, I often asked to be allowed to try my luck. Eventually I was shown how to hold and use the .22 rifle, or Dad's .38 pistol, which, of course, had a recoil that surprised me, but I gradually

became quite accurate and was often included in these target practice sessions along the river. I especially remember the Sunday I was allowed to shoot Dad's shotgun, the recoil of which upended me, and I picked myself up a bit wiser.

There were days in the fall when the women at the farm dressed in protective clothing, like long-sleeved dresses, jackets, or maybe in jeans belonging to our brother or Dad, so we could pick berries along the river—chokecherries, wild currants, grapes, or bullberries. The team would be driven up as close as possible to tall bushes or trees so we could reach the fruit. Juneberries were abundant then and we even found a few patches of wild plums. The wild sweet flavor of all this was greatly appreciated in the sauces, jams, and jellies that were made up, canned, or bottled for the long cold winter ahead. I remember especially the delicate flavor of chokecherry syrup on our pancakes and homemade bread.

Father had a timber claim along the Yellowstone and cut many poles for corrals. Sometimes he would find an old hollow tree being used by bees to store their honey in. A smoky fire would drive out the bees, allowing Dad to chop open the log and gather the wild sweetness.

Sunday School picnics were always great events. Huge amounts of food were spread out on makeshift sawhorse tables set up by the men. These picnics were family affairs, well chaperoned by parents and interested onlookers. The minister and his family were always present, giving the gathering the feeling of a camp meeting, complete with spontaneous singing by the entire group.

Of course, this was before we knew anything about radio or TV programs, so all joined in this get-together of friends and families. We made our own entertainment, appreciating the efforts of each individual. Ropes were often fastened onto the branch of a cottonwood tree, making swings for the younger children, or some fallen monarch would be turned into a "teeter-totter" for the younger ones.

The blessing said by the minister always gave us a feeling of being watched and cared for by God's unseen presence. How we enjoyed these Sunday afternoons! I remember the leisurely pace of the horses on the homeward trip, through sun-dappled cottonwoods and the ever-present rosebushes. The trails were often deep and filled with soft "silt dirt," muffling the clip-clop of the horses and the noise of the metal-rimmed wheels.

Among the lower Yellowstone's wild inhabitants are white-tailed deer (top photo: Mike Crider) and Canada geese (photo: Steve Wirt). Floaters (DFWP photo: Ken Walcheck) are likely to spot these and other wild creatures.

If you've ever come over a hill and seen stretched out below you, along a stream or dry watercourse, the shimmer of green leaves on tall cottonwoods, I'm sure you have never forgotten the sight. Like dancing facets of a diamond, the green leaves mark the courses of running streams and freshets through the rolling hills. There is no song like the murmur of cottonwood leaves in a breeze, especially when you are snuggled down in a round-up bed or sleeping bag.

The bare skeleton of the cottonwood after the fall winds have taken their toll is another of nature's pictures. Against the horizon, outlined by a colorful sunset, it is a masterpiece that is hard to duplicate. The bark of the old cottonwood trees is a timeless record

for those who are interested. Rough, rugged seams run the full length of the sturdy trunks, varying in colors of grey, tans, and browns. Often the gnarled trunks show the effects of their constant struggle with the elements. Lightning scars are evidenced by blackened and twisted stumps.

The lush green grass growing under cottonwoods makes good grazing for livestock or wildlife chancing to stray that way. The green meadows along the Yellowstone abound in wild yellow sweet peas, making clean, colorful nooks where bright-eyed calves are born.

The blossom on the cottonwood tree is a strange one. The fat buds erupt in due time, in the early sunshine, sending forth what makes me think of a turkey's wattle. You know how the turkey's deep-red, mottled wattle hangs down over his beak. Well, the flowers on the cottonwood tree hang like that and are the same mottled-red tassel. Of course, these finally mature into seed clusters that fly away on every breeze, the tiny seeds equipped with cottony sails to carry them along. Some folks object to this messy display, but to me it's another way that nature has to assure future generations of her beautiful seedlings and, eventually, trees.

I've always been amazed at the size of the tall cottonwood trees bordering the Yellowstone. They have a distinctive shape and form; even their silhouette against a crisp blue winter sky sets them apart from other species. I love to speculate on the bare outlines of trees, hoping to be able to name them by their characteristic shapes and sizes.

The Yellowstone in winter, when everything is blanketed in white and the river is frozen deep in ice, brings back another picture from my youth. In midwinter, if we looked carefully, we could spot smooth patches of ice suitable for skating. I remember moonlit nights when a bonfire would be built and skaters would join in mad races; of course, the areas were looked over by a responsible person to make sure no open spots were present.

The clear voices carrying through the crisp air often joined in songs familiar to all and could be heard for miles. Sometimes coyote voices from across the river seemed to join in the happy chorus. These parties usually ended up in someone's warm, friendly kitchen where we all enjoyed sandwiches and good fellowship.

Before Christmas, Dad would hitch a heavy team to the bobsled, making the trip to the coal mines across the river. Of course, this had to be done when he was sure the ice was thick enough to hold the team and sled. He would take note of the evergreens suitable for Christmas trees, often bringing one home atop his load of coal. He usually also brought one back to the little stone church for the Christmas Eve festivities, where sometimes he was Santa Claus, something I didn't realize until years later. Dad's twinkling blue eyes and merry "ho-ho-ho" really set the tempo for the evening.

I was always fascinated by echoes that seemed to follow the river, but of course, the badlands and buttes must have been a good backboard for all the sounds. Can you imagine the whistles of the few boats that plied the Yellowstone River?

I still remember the first time the whistle blew at our new sugar beet factory, loud and clear, ringing down the valley in a series of echoes that bounded and rebounded, a startling experience.

Cottonwood supports and siding were used in the early pioneer days, and dressed-down logs were used for log cabins. My parents built their ranch on the North Fork of Burns Creek, many miles away from the trees on the Yellowstone, but that is where they felled the logs for constructing the ranch buildings.

All activity seemed to center on the river, its life-giving water and generous supply of timber. The Yellowstone was once livened by the boats that forged upstream with supplies and downstream with loads of hides or cargo picked up along the way. Towns and small communities usually had their beginnings along the river, and many ranchers settled nearby for an assured supply of water.

The ice jams on the Yellowstone River have always been a source of interest. Maybe a bit morbid at times and not always spectacular, but I have seen a few shows that have remained with me over the years. One I remember happened when I was in

grade school. It had snowed a lot during the winter, and all of a sudden it warmed up, bringing a lot of thawing of ice and snow. I can't give the date, but school wasn't out yet for the summer. My parents had been watching for the breakup of ice jams above us, where huge ice floes had come down from Glendive, jamming several bends in the river.

We kept getting reports by word of mouth all through the morning; after lunch hour, we began to hear sharp reports, like pistol fire, from the direction of the river. Of course, we were all excited and curious to know just what was going on. Our teacher, Mr. Nevins, finally dismissed school and allowed us to hike to the river, which was about one and one-half miles away. When we reached the river, we beheld an awesome drama. Huge cakes of ice were being shot into the air by the tremendous force of the runoff from the mountains and intervening country above us.

It was truly a spectacular show. Some of the more adventuresome boys ran along the river on higher ground, pointing and exclaiming at each new explosion as ice chunks were shot into the air. We watched as field after field was flooded. Deer struggled to get to higher ground and safety. I remember a big straw stack that was swept along with a coyote riding on it. I would like to have helped him but there was just no way.

Finally, a worried teacher rounded us up for the hike back to town, which seemed much longer than our headlong flight to see the action on the river. My dreams that night were a bit wild, full of escapes from ice floes.

One cannot make a trip to the river without noticing how the trunks of the cottonwood trees have been scarred by cakes of ice when the river rampages out of its natural course. Many trees are broken off from this mighty force, and large areas of brush and young trees are pushed over in the rush downriver. There is no force like nature, mighty and persistent.

In later years, after I graduated from high school and was married in 1924, the Yellowstone River still played an important role in my life. My husband Bill and I both enjoyed outdoor activities. We spent many Sundays fishing along the river, enjoying the sport as well as the change in our diet. We didn't drive a team and buggy, of course, since we lived in town, but an old Model T Ford did very well.

About this time we became acquainted with Howard and Maggie Gatlen, who enjoyed the great outdoors as much as we did. The four of us spent many evenings and spare Sundays fishing or hunting along the river.

Maggie and I would have our picnic suppers ready when the fellows got home from work, then we would head for spots along the river where fishing was good. By this time Bill and I had several small boys to take along. But they were not a problem, as they usually bedded down on blankets and were soon asleep.

The fishing along the Yellowstone has always been good—and still is, if folks will just take time to locate a good spot. I still enjoy sitting on the river bank, holding a fishing rod. A time to take stock, to think through problems, and wrestle with situations as they come up.

The only means of crossing the river for many years was the old ferry, strung on a cable across the river. It took a bit of maneuvering to make the trip, which always fascinated me, but scared me, too. What if it broke loose, taking us downriver on the swift current? Hard telling where we might have ended up.

I always remember the story of my Dad nearly drowning at Fallon, when they were driving a bunch of horses across the Yellowstone. Fallon at one time was the largest shipping point for horses in the world. The flash of his wedding band in the last rays of a setting sun helped a man in a rowboat locate and save him as he was going down for the third time. A harrowing experience! How thankful I was that he was saved.

The unpredictable flooding of the river in the spring has always been a threat to farmers and ranchers located on the river bottom. The good topsoil, rich with silt carried down from above for years, makes good crops, gardens, and grazing for livestock, but it's always a gamble, just like any other venture we humans make.

After the fury of a heavy spring runoff has abated and the long-awaited warm spring days have arrived, there's no ride half so delightful as one in the back of a pickup truck, surrounded by some of my grandchildren, all of us drinking in the beauty of private nooks and meadows where wild sweet peas are at their best and wild roses rank row on row. Tall cottonwood trees glisten in the sun, the new, tender leaves shining as though they had just been waxed, and chokecherry bushes laden with their snowy clouds of blossoms give off their distinctive perfume. The air is heavy with the scent of blossoms, a fragrance that has never yet been bottled.

What a delightful nursery for the white-faced Hereford calves. I love to see a group of them, their round, white faces shining like new dollars, attended by one watchful mother. I'm sure they take turns babysitting.

Have you ever noticed a new calf up close? What long eyelashes he has, how clean he is after the grooming licks of his mother's tongue, how his fur seems to lay in marcelled curls? Absolutely beautiful.

I especially enjoy the bird songs we hear on our trips to the river. The mourning dove's sad cry I always associate with beautiful summer days, the white billowing clouds changing formations as we watch. Often we hear owls calling to each other. How thrilled I am when they seem to answer as we try to imitate them. If we walk carefully we might sometimes see one sitting on a branch or stump. Of course, the meadowlarks are ever present, distinctive with their yellow vests and black ties, pouring forth the lovely songs that only they can give. I still don't know the song or voice of the pelicans as they communicate with each other, but I'm always amazed at their large white bodies with black markings and pouchlike bills for catching fish.

Wedges of flying geese often follow the river, seemingly using it as a guideline to lead them to their nesting grounds to the north, or on their flight south as colder weather moves in. The haunting call of the geese as they fly over always prompts me to dash outdoors and locate them if I can.

Their remarkable instinct, which guides them on their migration even through the darkest night, is truly one of nature's wonders.

There are so many things to recall about the river that I'm afraid I can never do justice to it all.

I remember that the site of Sidney was almost located closer to the river, about where the bridge crosses it now. Folks wanted to call it River View, which would have been very appropriate, but we might have had problems of flooding, the banks forever being washed out by water.

All through our history our towns have been built close to running water; it provides a means of irrigation, of travel, of communication; and so the Yellowstone River has played an important part over the years. To see its power diminished to a mere stream would be a sad thing. I hope it never happens. ■

Outdoors in Montana

by Paul R. Pacini

It might be a lazy picnic in the park, or a refreshing swim, or tingling exposure to old man winter from the seat of a snowmobile. But we all take time for recreation.

The 1982 Montana Statewide Comprehensive Outdoor Recreation Plan (SCORP) takes a look at outdoor recreation. Recreational issues—such as access to and across private land, law enforcement in our parks, energy conservation, and more—are considered in SCORP.

Not to be overlooked are the needs of minority populations in Montana, an analysis of their recreational participation, and the availability of recreational facilities.

A review of wilderness proposals and a discussion of the concept of "destination vacationing" can be found in SCORP.

SCORP is about outdoor recreation in Montana. SCORP could be about you. Take part and write: Department of Fish, Wildlife and Parks, SCORP '83; Helena, MT 59620.

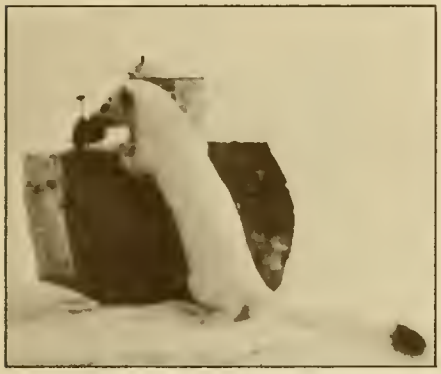
PHOTO CREDITS:
Garry Wunderwald, Montana Promotion Unit: family picnicking, Indian children dancing, chairlift, lakeside picnic, law enforcement, Going-to-the-Sun Highway in autumn (Glacier National Park)
DFWP photos, Paul Bushaw: hang gliding, floating
DFWP photo, Ron Aasheim: swimming at Colstrip pool
Bill Howell: snowmobiling
DFWP Film Center: Chauncey Flynn Ranch
Dan Burden: bicycling
Bob Jordan: Special Olympics
Diane Ensign-Caughey: cross-country skiing
Bill Schneider: wilderness lake

Readers Respond

Winter Help

Winter is rough on the wildlife that live near my home at the end of the road, three miles west of Hamilton. So, I've gotten into the habit of putting out hay for the deer and elk. Sometimes, impatient deer have even jumped into my pickup to get it.

I also put out suet and meat scraps for the birds, the suet nailed down so one bold magpie couldn't get it all. Imagine my surprise one morning when I saw this normally very shy little creature busily tearing away at the



suet. Bright in his winter garment of white, he returned morning after morning, even learning to come at my whistle. It was not long before I could practically feed him by hand, but carefully. I know that weasels are ferocious little animals.—*Al Brutto; Hamilton, Mont.*

Cat's PJs

Your magazine is the cat's pajamas. It shines like a lighthouse beacon in a stormy night.

The people on Kwajalein, both the natives and U.S. citizens, tremendously enjoy stories, information, and photos concerning our Treasure State.

You are appreciated.—*Paul Bushaw; Kwajalein, Marshall Islands*

Looks Forward to *MO*

I cannot begin to tell you how I look forward to receiving my copy of *Montana Outdoors.*

Of course, I would be remiss in not classifying your photography as being so fantastic it is in a class by itself. The animals just seem to leap out from the page, and the breath-taking scenery makes you feel like you are right there, walking in the knee-high grass of the prairie or watching the sun set over those beautiful mountains.—*Ray Bell; Mequon, Wis.*

Viewing Eagles

I really liked Riley McClelland's story, "McDonald Creek's Bald Eagles: An International Resource" in the Nov./Dec. 1982 *Montana Outdoors.* I think it is great that there is an area where the bald eagles can migrate to and hunt for their food. And also, as it says in the story, an area that is closed to human entry.

I would think that such a beautiful area would be open some time in the year for people to go and take pictures. I would like to know if I could get any information about this.—*Blaine Woodman (age 17); Plentywood, Mont.*

• *The lower McDonald Creek area is closed only during the eagle concentration period, usually Oct. 1 through Dec. 15. During the closed period, a viewpoint for watching and photographing bald eagles is available at the Apgar Bridge, which spans McDonald Creek.*—Ed.

Giardia Roulette

As a three-time veteran of giardiasis (caught in California, Washington, and the Smith River drainage, over eight years), it is good to see more information like Christine Deveny's article, "Don't Risk the Water" *(Montana Outdoors,* July/August 1982). You may ask when I'm going to wise up, but the odds are with me. It seems my choice is between taking precautions (boiling and using iodine purification tablets on every drop I use—a hassle with debatable results) or using water from streams less likely to harbor the organism *(Giardia* roulette).

One symptom not mentioned is very anti-social gas. On the plus side, the preferred drug now is called Atabrine; it works a little more slowly, but it has fewer side effects and is far less costly.—*Rich Baerg; Orofino, Idaho*

Readers Applaud Photo Issue

Your Jan./Feb. 1983 issue of *Montana Outdoors* is one of the nicest pleasures we have had from a magazine. Each photo is simply delightful. The scenes of the mountains and sky are breath-taking, and how we enjoy the shots of the flora and fauna. No beauty can compare!

It is an issue we shall treasure, and we thank you for sharing with us such enjoyment.—*Carl and Ruth Haun; Bozeman, Mont.*

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I certainly enjoy these very special photo issues. They are very well done. — *Mrs. Jim Wells; Rock Rapids, Iowa*

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Your Jan./Feb. Special Photo Issue is a masterpiece. Having lived most of my adult life in Montana, I always feel it has no equal as a place to live—both in terms of its people and its majestic beauty.—*I. R. Hollenbeck; Palmyra, Mo.*

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Never have I been so moved to put pen to paper as I was after seeing your Jan./Feb. 1983 Special Photo Issue. As an Air Force officer, I have been fortunate to spend two delightful tours in Montana. Each time, I was exposed to new, exciting, colorful, and always beautiful people, places, and events. My wife, daughter, and I have lasting, pleasant memories of the camping trips, rodeos, fishing expeditions, and just plain nice Sunday drives we experienced there.

When I was transferred to Washington, D.C., last April, I thought all of that was lost forever, but, by chance, my landlord's family was from the Billings area and they subscribed to your fantastic magazine. Thus, we have been able to relive our adventures every time *Montana Outdoors* arrives in the mailbox.

Today I brought the Jan./Feb. issue to the office so I could show people just how glorious Montana is. Everyone who has seen the photos has literally gasped at the splendor you have captured. I will keep this copy forever. Please keep up the outstanding work.—*Capt. F. B. "Rik" Gervais; Burke, Va.*

Turkey Hunting Can Be Hazardous To Your Health

by Donald M. Garver
illustrated by Michael Matherly

• It's no secret around the Illinois Department of Conservation that Fishery Biologist Don Garver is one of the better turkey hunters in his state. Following is a first-person account of one turkey hunting trip that almost turned into a tragedy, plus 10 turkey hunting commandments with which every turkey hunter can live. Although the story is about an Illinois turkey hunt, the message applies to turkey hunters everywhere. The article first appeared in the April 6, 1981 edition of Outdoor Highlights, *an Illinois Department of Conservation publication. It was reprinted in the Jan./Feb. 1982 issue of* Turkey Call. —Ed.

It was a balmy, overcast spring day in April 1981. The Illinois wild turkey season was in progress, and I was hunting a familiar area near Oakwood Bottoms in southern Illinois. I had located a gobbler on the roost the evening before, and waited patiently during the early morning hours for him to open up. He never made a sound, and the minutes ticked away until over an hour of daylight had lapsed.

Hunter activity had probably wised up the old tom, so I finally decided to set up and call blind to him. I selected a hilly area in the bottoms, where several small drainages intersected. I knew I wasn't more than a few hundred yards from the gobbler, unless he had been disturbed and changed roost locations.

I found a good-sized hickory tree to sit against, got comfortable, and began with a series of assembly calls, lost calls, and cackles. A turkey gobbled in the distance! A few minutes later, I offered some yelps, purrs, and clucks. I was answered with several yelps and clucks that were much closer.

Smart old toms are reluctant to gobble if they've been hunted much, and often go to yelps and clucks to locate hens.

The turkey continued to cluck and yelp, and I answered it sparingly with appropriate calls. The bird stood its ground, casting back and forth in front of me, just out of sight. It was behaving in a manner not typical of a hen but very much typical of a gobbler.

I decided to move about 40 yards to my rear and left, to represent a hen moving, feeding, and possibly walking off from the lonely gobbler.

This tactic often convinces a long-bearded tom to make his move, and I've killed a number of smart gobblers in this manner.

It worked. The gobbler continued to call, and came a few yards closer. He started to cast to my left and was now about 100 yards out. The old rascal was placing a small ridge—maybe three feet high—in between us for a stealthy approach.

I decided to chance his seeing me and again moved 30 yards to my left, keeping low and moving fast, but never going toward the gobbler.

No tree large enough was available, so I slid into a high part of the ridge, face down. The ground was soft and muddy from recent rains, but a dedicated turkey hunter doesn't let such trivia bother him when he's got a gobbler gaining interest.

The turkey continued to cluck occasionally, and suddenly let out four demanding yelps. He was definitely getting closer, but I still couldn't see him. Some ground foliage about 25 yards in front concealed him, and it looked as if he would use the cover to slip in, have a look, and find out if I was really that sweet, affectionate-sounding young hen.

I could now see glimpses of movement behind the green leaves that concealed him—he was coming. He looked very dark in the weak light beneath the huge pin oaks. I felt certain it was the gobbler and not a hen in company with my bird. He was only 28 yards away; still I wasn't sure of my target.

Suddenly, I saw his bright red wattles gleaming through the dense branches of newly grown leaves. I now knew it was not a hen but my gobbler! His head would slip out for that one quick appraisal. I needed only that head and several inches of neck to aim at . . . he was close . . . he would be mine!

I eased the safety off my Remington 12 gauge, three-inch magnum. I took the slack out of the trigger and only a soft breath of pressure lay between the firing mechanism and the magnum 1⅞-ounce double-X 4's that would rip my bird's head from his body. A split second to shoot . . . tight pattern . . . aim carefully!

My God! it was a hunter! I felt the life drain from my body as my face fell down into the mud. My body trembled with fright and I could not move. What had looked to be the red wattles of a gobbler was, in fact, a bright red T-shirt gleaming through the open button of the hunter's camouflage jacket.

After several minutes, I was able to look up and saw the fellow now standing and looking about. He shrugged his shoulders and, without even seeing me, walked slowly out of sight.

I lay trembling, not able to stand or talk. Perspiration poured from my forehead and burned my eyes. I had just had an experience without precedent in my life. I have hunted for over 30 years, and bagged thousands of wild critters, including many wild turkey gobblers. I had just come within a split hair of tearing a fellow hunter's head from his body, and he didn't even realize what had happened. He is alive not because I am a good hunter, but because I happen to be a particular hunter. I never chance killing a hen, and I only shoot adult gobblers (passing up juveniles). During the 1980 season, I called in and passed up 10 different juvenile gobblers in Illinois, but failed to bag an adult bird.

My hunter friend would probably be dead if he had encountered someone in my role who would have chanced killing a hen, or shot when the red patch of "wattles" emerged, or who, in his excitement, failed to wait the split second it took for a fine trophy gobbler to turn into an incredibly stupid turkey hunter.

Put several hundred camouflaged turkey hunters in the woods, pursuing an extremely wary adversary, and you have the most potentially dangerous situation imaginable. The worst mistake a hunter can make is to believe he has become so proficient that he is infallible.

My hunter friend had used the gobbler slat on a Lynch box call, and he had used it extremely well. He sounded, acted, and moved exactly like an adult tom. He had stalked, crouched, and crawled more than 40 yards to me. Whether his intent was to try and kill a hen (me) or stalk a hen hoping she was in company with a gobbler, I really don't know. I had not used a gobbler call, nor had any turkey gobbled closer than 250 yards to us. It really doesn't matter! The important point is that my hunter friend did every dumb thing a smart, ethical turkey hunter would never attempt.

Every turkey season throughout the nation, hunters are shot by each other—in the hands, buttocks, back, and face, and, of course, some are killed.

To de-emphasize the dangers of any hunting—especially wild turkey hunting—is to not realistically appraise the very real dangers of an outdoor sport that many outdoorsmen love and treasure so immensely.

A hunter cannot control what his fellow sportsmen may or may not do in the field. But a hunter can feel reasonably safe if he controls what *he* does and follows a few very important rules for survival when turkey hunting.

Here are my 10 commandments for staying alive:

1. Don't ever attempt to approach closer than 100 yards to a hen or gobbler.

The hen or gobbler you hear often will be a hunter! He may call so proficiently and realistically that he sounds even better than a real turkey. If you can't call in your bird, then you don't really deserve one.

2. Never select a calling site with your back to a tree that is smaller than the width of your shoulders.

Small trees won't hide slight visible movement of your hands or shoulders and may look like a part of a turkey to the hunter stalking your sweet calls. Use that tree to protect your back, where you can't see.

3. Never jump and turn suddenly because you hear a turkey close behind you.

That turkey behind you could be the barrel of a shotgun exploding at you. Wait till the bird walks where you can see it, or call it back later.

4. Never select a calling site where you can't see at least 40 yards in all directions.

Sitting five yards off one side of a razor-backed ridge is suicidal. A hunter may rush over the top, blasting away at what he thinks is a flock of turkeys. Either hunt on the top of a ridge where you can see down both sides, or hunt at least 40 yards down the slope of the ridge. Good turkey calls invariably bring in unskilled hunters. I've called in hundreds of hunters to within killing distance.

5. Never stalk a turkey.

The idea is to call your gobbler to you. Some of those turkeys you stalk will be anxious hunters using a gobbler call. If you have tried to call a gobbler to you and decide moving to another calling site might convince him to come, don't ever attempt to move closer. If it's a gobbler, he'll probably see you; if it's

a hunter, he may shoot you.

6. Don't use a gobbler call unless it's one of those rare situations where circumstances really warrant trying something different.

When you shake a gobbler call, your hand can look like a turkey's head and that gobbler call is guaranteed to attract every hunter who hears it! If you're unsure of how and when to use a gobbler call, don't use it. I occasionally gobble, but it always makes me nervous as hell.

7. Don't think because you're fully camouflaged that you're totally invisible!

You're plenty visible to both turkey and hunter when you move even slightly. Sitting perfectly still will kill more turkeys than all the camouflage you can wear, and sitting still won't get you shot. Turkeys always see you, but the movement is what panics them. Turkey Biologist Jerry Garver once had two adult gobblers strutting within a few yards of him and his son while his son wore a yellow jacket and neither of them wore any camouflage clothing.

8. Never wear red, white, or blue clothing—not even undergarments of these colors.

Red is the color many hunters count on to differentiate a gobbler's red wattles from the blue-colored hen's head. White will look like the snowball-colored head of a gobbler; leave those white handkerchiefs at home. Blue is the principal color of a hen turkey's head, and a few unethical sportsmen may decide to illegally harvest a hen.

9. Never presume that what you hear or what answers you is a turkey.

The better you learn to use a hen call, the more hunters you will attract, and many hunters with low IQs may stalk you.

10. Don't try to hide so well that you can't see what's happening.

You can't kill a turkey you can't see, and if you call in another hunter, you sure as heck want to know it! I select calling sites where I can see at least 75 yards and have nothing restricting my movements. A gobbler will walk up to within five feet of you in open woods if you don't move. I've had many do it. Gobblers don't like dense, brushy areas where they can't see potential trouble from natural predators and/or hunters.

Biologist Jerry Garver suggested use of a two-inch circle of blaze orange sewn on the back of a camouflage hat and three-inch by ½-inch strips of orange sewn on the back side of each elbow. I considered this and decided that two more orange circles sewn on each hip pocket would be good also. On rare occasions it might cost you a gobbler, but it would definitely reduce to practically nothing your chances of being shot.

A crisp, calm spring day, when the dew droplets sparkle and tumble from newly formed leaves, can be an experience near reverence to an outdoorsman. The shattering gobble of a wild turkey in the distance sends goose bumps across the back of even the most seasoned hunter. Wild turkey hunting can be the best and worst of outdoor experiences. A clear mind, great hunting skill, patience, and perseverance often will culminate in a select few hunters consistently bagging their gobblers year after year, but only the 10 commandments of safety will keep both you and your fellow hunter alive and well to hunt another time. ■

Book Reviews

NATURE'S DESIGN: A Practical Guide to Natural Landscaping, by Carol A. Smyser and the Editors of Rodale Press Books, Rodale Press, Inc., Organic Park; Emmaus, PA 18049, 1982, 432 pages, $21.95 hard cover.

It sounds like a homeowner's dream: beautiful natural landscaping that doesn't require hours of cultivating, fertilizing, pruning, mowing, and spraying each spring and summer. Yet, with "Nature's Design: A Practical Guide to Natural Landscaping," you can plan and execute a low-cost, low-maintenance, natural landscape yourself.

The secret is to work with nature, utilizing the natural habitat your site provides and plantings native to that particular habitat.

In the first of "Nature's Design's" four sections, you will learn how to assess the ecological characteristics of your site: the soils and rocks, water conditions, climate, plants, and wildlife. Successful natural landscaping depends on a clear understanding of the environmental conditions of your property.

Section Two leads you through the actual creation of a landscape plan. Here, extensive charts list plants native to 12 ecoregions of North America to help you choose the right plants for your site—plants that will thrive naturally, without your help.

Basic landscape construction to complement natural settings is covered in Section Three. Included are: grading, drainage, retaining walls, paving, and fences.

The final section tells how to prepare the soil for your plantings, where to find native plants, and how to propagate them yourself. Also included are tips on maintaining different types of natural settings such as prairies, meadows, woodlands, and city gardens.

"Nature's Design" helps you establish a natural landscape, where you can sit back and relax, and enjoy your own beautiful setting—and let nature do the work!

DUCKS UNLIMITED COOKBOOK, Favorite Recipes Press, P.O. Box 77; Nashville, TN 37202, 199 pages, $7.95 soft cover.

A good, old-fashioned value is what the "Ducks Unlimited Cookbook" amounts to. It's chock-full of recipes, with a natural emphasis on tasty ways to prepare waterfowl and game. But not forgotten are recipes to make any meal complete—starting with appetizers, soups and stews, salads, vegetables, side dishes, breads, and last but not least, desserts.

Added bonuses include a calorie chart, herb and spice chart, and a metric conversion chart.

For your enjoyment, here is a simple, but delicious, way to prepare pheasant from the "Ducks Unlimited Cookbook":

2 pheasant, quartered
salt and pepper
flour
butter
1 c sliced fresh mushrooms
1 c white wine
3 T lemon juice
½ c chopped green onions
½ c chicken broth

Wash and dry pheasant inside and out. Sprinkle pheasant with salt and pepper; coat with flour. Brown in a small amount of butter in skillet; remove pheasant. Sauté mushrooms in pan drippings. Add pheasant. Combine ½ c melted butter, wine, lemon juice, onions, broth, and ½ t each salt and pepper in bowl. Pour over pheasant. Simmer, covered, over low heat for 1 hour.—*Dovard Mitchell; Greenville, Mississippi*

Perhaps best of all, a portion of the cookbook's selling price is passed on to DU and its work of preserving wildlife and waterfowl habitat.

The cookbook can be ordered by writing to the above address, or by calling this toll free cookbook hotline: 1-800-251-1520.—*Donita Sexton, art director*

Montana's Changing Scenes

by Jim Lotan

MOST OF us who live, work, and play in and around Montana's mountains and prairies perceive them as a permanent, unchanging part of our lives. In an age where rapid change is disconcerting, these natural landscapes are of great psychological comfort. They are similar to the security provided by the comfortable old tweed jacket that Alvin Toffler discussed in "Future Shock." It is probably the reason that we react the way we do to new housing developments, clearcutting, new ski developments, or whatever else alters our beautiful landscapes. These everlasting hills are something we depend on to be stable in the hectic pace of modern living.

But just how enduring are these favorite scenes of ours? George Gruell, U.S. Forest Service wildlife biologist at the Intermountain Forest and Range Experiment Station's Northern Forest Fire Laboratory near Missoula, began to wonder how much Montana's landscapes—and wildlife habitat—have changed since the days of early settlement. To find the answer, Gruell studied photographs taken in Montana during the 19th century and early 20th century. Then he and his colleagues visited and re-photographed the areas shown in the original photographs.

Early photographs—taken between 1871 and 1946—were obtained from a variety of sources. Some were found in the National Archives in Washington, D.C.; the U.S. Geological Survey in Denver, and the Montana Historical Society in Helena. Others were family photos taken for personal reasons. Thousands of photographs were screened. Eighty-six locations representing a cross section of Montana's forest and rangeland vegetation types were visited and re-photographed.

What do Gruell's photo comparisons tell us about our "enduring hills?" First of all, they show that the topography itself is relatively stable, bulldozers notwithstanding. But the permanence of the vegetation that clothes these hills is something else again. It is remarkably dynamic—with or without disturbance! Grasses, forbs, shrubs, and trees grow, die, and are replaced. Some species disappear and other species emerge to take their place.

These remarkable changes are not the result of random events, but follow a predictable pattern depending upon characteristics of plant species and the influence of the environment. Beginning with bare ground, "pioneer" plants rapidly colonize a site. These plants alter the site, establishing conditions for replacement by other species; these, in turn, establish yet another set of conditions and the vegetation progressively changes. This process is called *succession*. Disturbance will move this sequence of vegetation development back toward the beginning of the process. If you want a good demonstration of succession, quit weeding your garden for a few weeks during the growing season. It will grow up rapidly with what we call weeds—pioneer plants able to thrive on disturbed areas.

I have selected nine of Gruell's photo comparisons to illustrate changes that have occurred since roughly the turn of the century. The average period between the old and new photo is about 80 years. These photos were taken throughout the state, as shown on the accompanying map.

From these photo comparisons, we can see that in the late 1800s and early 1900s the vegetative cover on Montana's landscapes was in an earlier state of succession. Some early photographs show evidence of wildfires. West of the Continental Divide, Montana's moist, coniferous forests were mixtures of young growth interspersed with mature stands. Conifers in dry areas were typically widely spaced with open understories. The recent photos show that in many cases coniferous forests have replaced herbs and shrubs.

In the dry regions east of the Continental Divide, the photos show a considerable increase in conifers where formerly open areas existed. Shrubs, including big sagebrush, bitterbrush, and mountain mahogany, also show marked increases. However, as succession has progressed, many of these shrubs have died or become decadent because of various natural factors and competition from conifers. Most striking is the encroachment of Douglas-fir into former grasslands or sagebrush/grass communities. Formerly open areas are now forests! I have seen timber harvested in Montana on areas that 100 years ago were open rangeland.

Gruell believes that these changes in vegetation have occurred largely because of the reduction of wildfire in Montana's forests and grasslands. As the West was settled, the use of fire by Native Americans was curtailed, and fuels were broken up by grazing, roads, and cultivation, making fire suppression much more feasible. The absence of fire in many of Montana's vegetative communities has greatly affected plant succession over the past 75 years, as illustrated in Gruell's photo comparisons. Some ponderosa pine stands that had a natural fire cycle of 10 years or so have not burned in the 75 years since the early photograph was taken. These stands have become densely stocked with young Douglas-fir trees. Previous fire regimes would have maintained open, parklike stands of mature, yellow-barked ponderosa pine.

In some cases, the increase in cover has made the scenes more aesthetically pleasing to many people. However, this improvement in aesthetics often has been at the expense of wildlife habitat. Although it is true that increases in vegetation can have beneficial short-term effects on cover-dependent species like mule deer, over the long term heavy cover usually results in a decrease in the grass, forb, and browse species so important for good wildlife forage.

Wildlife response to change in habitat is related to many factors: plant species on the site before disturbance, time since disturbance, habitat requirements of the wildlife species, and behavior and movement patterns of the species. Fires in moist habitat types generally create vegetative mosaics of different species, age classes, and densities that are good for wildlife. Big game, ruffed grouse, snowshoe hares, and other species that require early stages of forest succession are usually benefited. Other species that require

mature or overmature forests may be displaced by fires. But in the long term, fire usually aids wildlife; it provides snags and down logs on which many species depend, and it recycles and rejuvenates the forest.

Grass- and forb-eating species, such as antelope and bighorn sheep, are favorably affected by fire. Fire may also have a positive influence on wintering elk, particularly east of the Continental Divide where they are primarily grass foragers. Small mammals like deer mice and ground squirrels (and the birds and mammals which prey on them) are benefited by fire, as are bird species associated with grassy habitat, such as the sharp-tailed grouse.

Obviously, the increase in conifers and the decline of early successional plants in the absence of fire can have far-reaching impacts on wildlife habitat. What can be done to improve this situation? The return of carefully managed or prescribed fire to coniferous forests is under way on many public and private lands. Much of this effort has been on commercial forest lands for purposes of reducing fuel hazard or changing the mix of tree species. However, fire is being increasingly used to manage vegetation for wildlife enhancement.

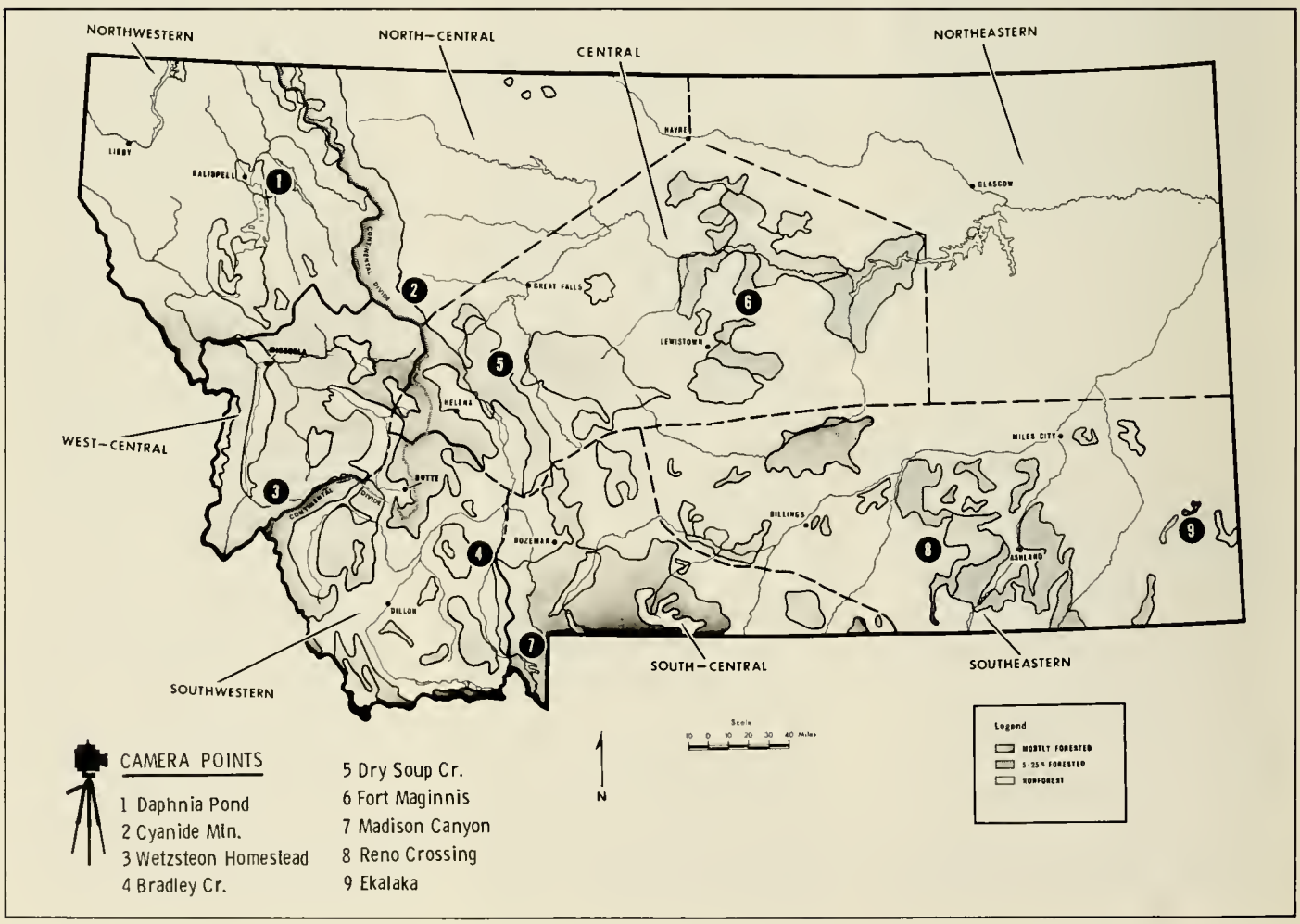
Progress is being made in using fire in standing timber with little damage to desirable trees. For example, over 20 years of experimenting with surface fire beneath ponderosa pine, Douglas-fir, and larch on the Kootenai National Forest has resulted in improved wildlife habitat.

Perhaps the greatest challenge for the use of prescribed fire is in bunchgrass and sagebrush plant communities east of the divide that have been heavily encroached upon by Douglas-fir. Usually forests on these sites have low timber-producing potential, and by properly applying prescribed fire, long-term benefits to wildlife can be realized.

Wildlife biologists working with foresters have many opportunities to identify areas where fire will benefit wildlife and to prescribe treatments that will yield good results. Fire and wildlife management should be an integral part of wildland management.

The photo comparisons on the following pages provide us with a perspective to better manage Montana's wildlands. They graphically demonstrate that many of Montana's landscapes have changed considerably in the 80 years or so since the early photographs were taken. Change is nature's way. And, in many cases, European man has greatly influenced or altered natural changes.

The next time you are enjoying your favorite scene, try to imagine what it may have looked like 100 years ago. Get out of your car. Get off the trail. Look for evidence of previous plant communities. Sagebrush skeletons in the understory of a Douglas-fir stand, for example, indicate the change from grass and sagebrush to a forested condition. Study the photo comparisons in this article and in Gruell's more technical report, soon to be published, which will be available from the Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station, 507 25th St.; Ogden, UT 84401. Once you understand what has taken place, you will see evidence of these changes in other places and wonder how you could have missed it before. ■



DAPHNIA POND, FLATHEAD LAKE (3,100 feet elevation)

1902: Looking north toward Daphnia Pond with the Swan Range in background. The site is located on the east side of Flathead Lake three miles north of Woods Bay. Snags attest to a fire in the late 1800s that killed most of the conifers around the pond. Removal of conifers by fire and fire's stimulating influence on understory plants resulted in high production of herbs and shade-intolerant shrubs such as willows.

1981 (79 years later): Dense conifers have flourished on the near slope at right, including ponderosa pine, Douglas-fir, larch, and spruce. Cottonwood and dogwood are abundant along the pond edge, while shade-intolerant shrubs (e.g., willows and serviceberry) are fewer beneath the canopy of conifers. Cattails now predominate on the pond. Autumn haze obscures the Swan Range in the distance.

CYANIDE MOUNTAIN, ROCKY MOUNTAIN FRONT (5,300 feet elevation)

1900: Looking west-northwest toward Cyanide Mountain in the Wood Canyon drainage, Rocky Mountain Front. Influence of wildfire in the latter 1800s is indicated on left side of photo and on Cyanide Mountain in the distance by presence of snags and early successional vegetation, including aspen. Grassy slopes on right are apparently too dry to support conifers.

1981 (81 years later): Dense conifer cover has increased on near and far slopes. Closure of Douglas-fir forest canopy (lower left) has resulted in deterioration of aspen and associated early successional plants. Proliferation of conifers is apparent in distance. Camera was moved about 100 yards downslope from original position to avoid trees that screened the view.

WETZSTEON CABIN, EAST FORK BITTERROOT RIVER (4,400 feet elevation)

ca 1895: Looking west at the Jake Wetzsteon residence in Ross' Hole (East Fork of Bitterroot River near Sula) 0.7 mile north of Highway 472/State Highway 93 junction. The drier, southwest-facing slope on right is a ponderosa pine climax site. Perennial grasses predominate in the understory. The cooler Douglas-fir climax site on the northeastern slope and in the draw supports more conifers. The absence of fire for several decades allowed regeneration of ponderosa pine and Douglas-fir.

1980 (about 85 years later): Conifers have flourished in the absence of site disturbance. A fire scar sample from a ponderosa pine in this locality showed that fires occurred about every 10 years prior to settlement. New road alignment necessitated placement of camera at lower position.

BRADLEY CREEK; NORRIS, MONTANA (5,200 feet elevation)

1901: A north-northwest view of Bradley Creek along present-day U.S. Highway 287 approximately four miles south of Norris. Photo shows a team that was hauling machinery. Vegetation in foreground appears to have been heavily grazed by livestock. Willows and aspen are growing along the tributary behind the horses, while Rocky Mountain juniper and limber pine of varying age occupy the dry southerly slopes in distance.

1981 (80 years later): Conifers are more dense in background, even on this relatively dry site. The skunkbush on lower slope at upper-center has increased in size. The absence of livestock grazing in 1981 had allowed an increase in fine fuels comprised chiefly of cheatgrass and bluebunch wheatgrass. Aspen clone at left has regenerated from suckers. Foreground is in a fenced pasture.

DRY SOUP CREEK, BIG BELT MOUNTAINS (4,900 feet elevation)

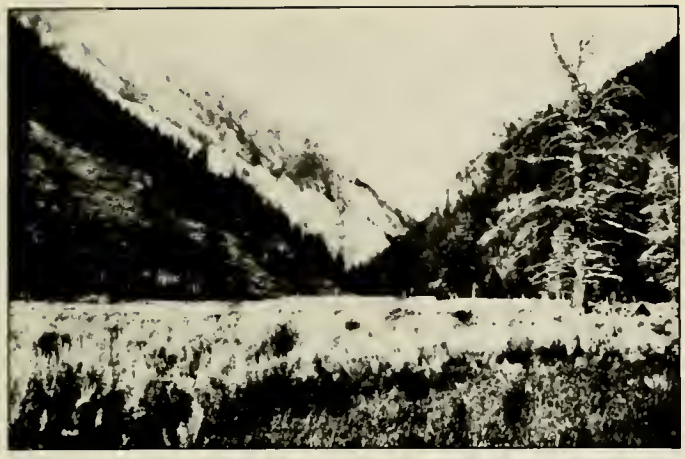
1900: Looking north from a position at the mouth of Soup Creek approximately four miles above the Soup Creek crossing at the old Smith Place, Big Belt Mountains, Helena Ranger District. This area was severely burned, apparently by a large wildfire in 1875. Shrubs and herbs comprised the primary vegetation during this early stage of succession. The dark shrubs in foreground are chokecherry. Heavy utilization by livestock is evident.

1980 (80 years later): Canyon bottom is now covered by dense vegetation, including ponderosa pine, Douglas-fir, Rocky Mountain juniper, chokecherry, dogwood, willow, skunkbush, mountain maple, ninebark, and mock orange. Conifer cover has increased on slopes in background. Herbaceous vegetation in foreground had not been grazed by livestock in 1980 before this photo was taken.

FORT MAGINNIS, JUDITH MOUNTAINS (4,300 feet elevation)

1888: A north-northwest view of troopers in the vicinity of Fort Maginnis. This fort was located on the east side of the Judith Mountains (in distance) about 20 miles northeast of Lewistown. Ground cover on ridge and lower slopes in the distance is apparently dominated by perennial grasses. Conifers on far slopes are largely confined to localized sites. The conifers regenerating on distant slopes are indicative of wildfire several decades earlier.

1980 (92 years later): In the absence of disturbance, Douglas-fir and ponderosa pine have flourished on the far slopes. Stream bottom in the distance at center-left of photo, which formerly was treeless, now supports large cottonwoods, Douglas-fir, and ponderosa pine. Shrubs, including chokecherry, currant, rose, shrubby cinquefoil, and common juniper, are most conspicuous in the rocks, as are conifers and shrubs at left-midground. The photo was taken late in the season, and vegetation in the foreground shows evidence of current-year livestock grazing.



MADISON RIVER CANYON (6,400 feet elevation)

1872: From Madison River Canyon at a site now occupied by Campfire Lodge Resort (below Hebgen Lake), the view is north-northeast toward outlet of Cabin Creek. Mountain big sagebrush dominates the flats. Lower slope at left supports aspen of several ages. Fallen snags and age of conifers on this slope and lower part of opposite slope indicate that a wildfire swept this locality several decades earlier, probably in 1840. Douglas-fir trees on the lower slope and bottom became established following the fire in 1840. Trees on right apparently died following insect attacks.

1981 (109 years later): Conifers have formed a closed canopy on slopes on both sides of this scene. Crown closure of conifers has resulted in aspen deterioration at left. Canyon bottom shows evidence of having been cultivated in earlier years. Smooth brome and fireweed comprise a significant portion of lush herb cover that includes little sagebrush. Cabins made it necessary to move camera to left of original position.

SITE OF RENO'S RETREAT, LITTLE BIGHORN RIVER (3,100 feet elevation)

1886 (10 years following Custer's Battle): A north-northeast view of a reenactment of Major Reno's retreat across the Little Bighorn River adjacent to Custer Battlefield. Young cottonwood trees occupy the foreground. Bottomland shrub cover appears to be predominantly Wyoming big sagebrush, while slopes support Rocky Mountain juniper and shrubs.

1981 (95 years later): A few cottonwoods in the foreground grew into large trees. Sagebrush continues to flourish in the bottomland. Vegetation on the slopes appears much the same except for establishment of juniper in the draws. The camera is on the edge of a cultivated field behind the original camera point.

EKALAKA HILLS (4,000 feet elevation)

1946: View is south-southeast in the Ekalaka Hills, Custer National Forest, about one mile north of the A. Peabody Ranch. Photo was taken from camera point marked by iron post for purposes of recording encroachment of ponderosa pine into grasslands. The dark shrubs in midground are snowberry. Livestock apparently had not grazed this locality at the time the photograph was taken.

1981 (35 years later): Absence of disturbance has allowed ponderosa pine to occupy former grasslands, which have been subjected to intense grazing. Condition of the snowberry in center of photo suggests that this shrub has deteriorated over the past 35 years.

Nature's Mousetrap

by Vince Yannone

painting by Takehiro Taira

Three species of weasel are found in North America and all three inhabit at least part of Montana. The long-tailed weasel *(Mustela frenata)* is found throughout the state and is the largest, about the size of a squirrel. The short-tailed weasel *(Mustela erminea)* is sometimes mistaken for its longer tailed cousin. While the long-tailed weasel sometimes is as long as 24 inches, the short-tailed weasel rarely measures longer than 13 inches. It is also considerably smaller, usually weighing between 3.1 and 6 ounces. Just as its common name implies, the least weasel *(Mustela nivalis)* is the smallest, measuring only seven or eight inches long and weighing one or two ounces. It is the world's smallest carnivore (meat-eater).

Weasels belong to the Mustelidae family, which also comprises mink, marten, fisher, wolverine, badger, river otter, black-footed ferret, and four different types of skunks. Although members of the family vary in size and color, they usually have long, slender bodies, short legs, rounded ears, and anal scent glands. Male weasels are distinctly larger than females.

Weasels take a variety of prey. Smaller mammals (from mice to rabbits) and birds (to the size of grouse) are on its preferred foods list. In her book, "Sleek and Savage," Delphine Haley writes: "Tooth for tooth and ounce for ounce, the weasel is the most efficient predator in the mammal world." She notes they are more effective than any mousetrap in protecting fields and orchards from meadow mice, rats, and pocket gophers. Their genus name, *Mustela*, literally means "those who carry off mice." Predators, large or small, kill to eat, but the weasel has a reputation of killing for the pleasure of doing so. Many biologists dispute this, believing instead that the weasel is merely responding to its inherited trait of self-preservation: When the prey is available, the weasel will kill.

Weasels are persistent and often pursue their quarry until they successfully capture it. Their senses (particularly hearing and smell) are highly developed, and they are both curious and bold. They have even been known to climb a tree to capture a meal.

The weasel falls prey to creatures such as fox, lynx, large owls, and its relatives, the mink, marten, and fisher. But its small size and agility make it difficult to capture. According to Leonard Lee Rue III ("Furbearing Animals of North America"), "a weasel's body can go through any hole that it can get its head through." He notes that an adult female long-tail and male and female short-tails can go through one-inch by one-inch wire mesh.

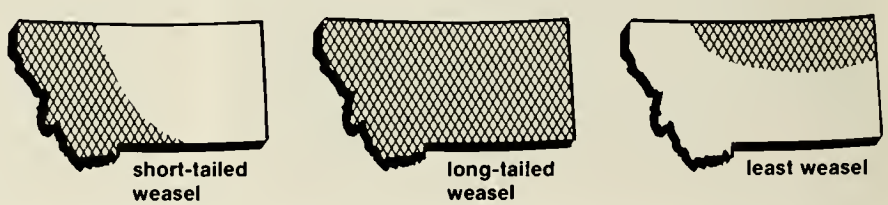
Weasels breed from May through early August. Gestation is approximately 270 to 279 days, with April or early May the most common times for female weasels to have their young. The home den is generally a burrow under a rock pile, boulder, or some other secure spot. Weasels line their dens with grasses and even hair plucked from their prey. They are prolific, having from three to 10 young per litter; from four to six is common, and cases of as many as 12 young per litter have been documented.

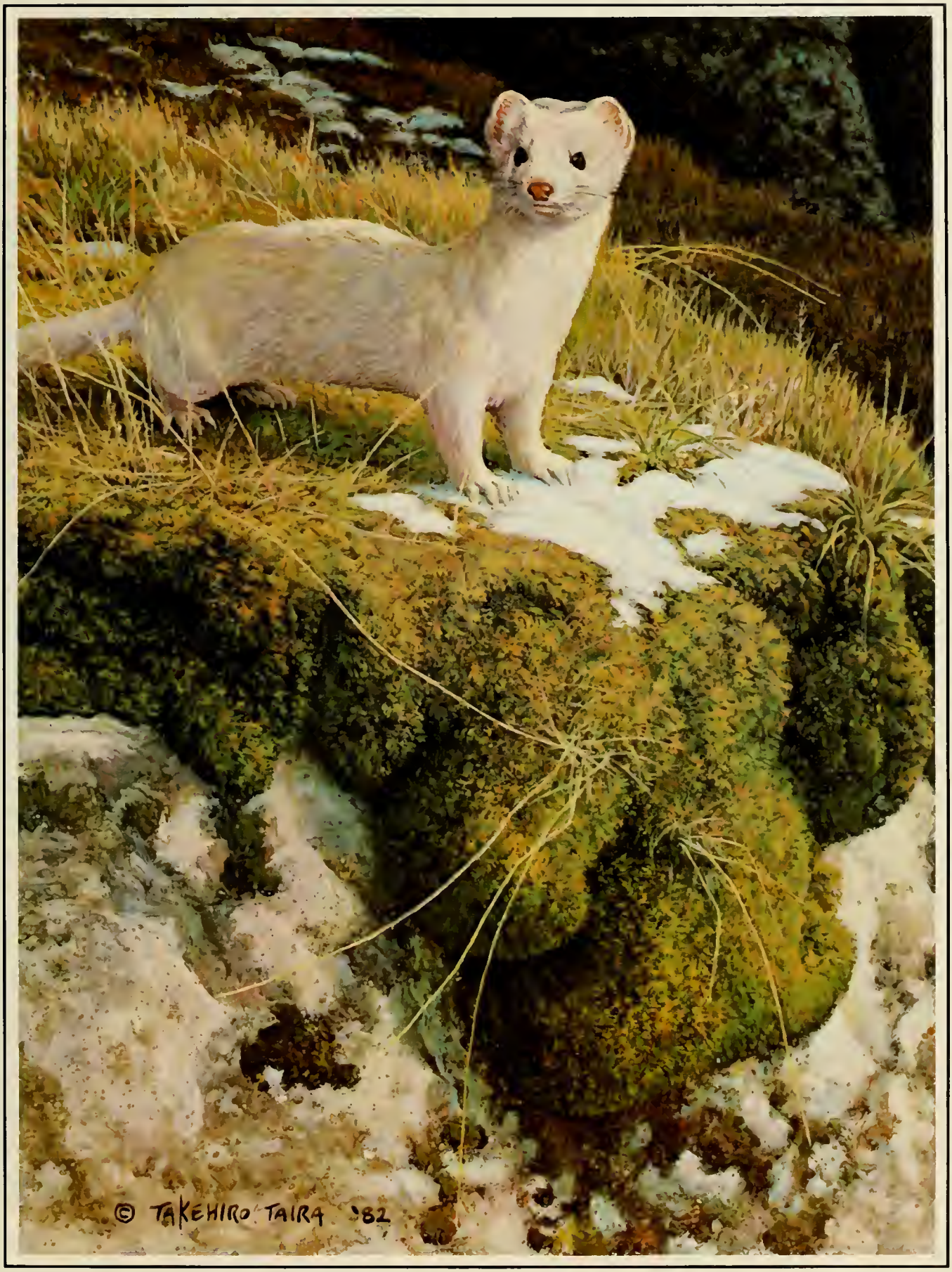
The baby weasels are born with just a few sparse, white hairs on their heads and backs of their necks. They are about 1½ inches long. Once they become furred—usually within 30 to 35 days—they begin to look like the adults. Until they are about three months old and able to fend for themselves, the mother defends them with her life.

In the summer, Montana's weasel species are brown above with whitish fur on their bellies and feet. All three species turn white in winter. The long-tailed and short-tailed weasels have a black tip on their tails, while the least weasel lacks the black tip. This white fur is ermine, the "fur of kings." Haley writes: "Its soft, white pelt, with black tails symbolizing the highest rank, adorns the capes of Europe's royalty. The British have used vast quantities of the black and white ermine pelts for coronation robes. . . ."

Today, the pelts in ermine phase are not in great demand; last year they sold for about $2 per pelt. ■

Distribution of Weasels in Montana

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CONSERVATION EASEMENTS:

Protection for Critic Winter Range

by Bruce A. Bugbee and John B. Wrig

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photo: Bill McRae

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HIGH in the forest, the buck stood in deepening snow. A white mantle fell from his thick neck as he turned to survey the valley lying far below. Tree branches, bent low by their burden, offered some promise of food, but most browse would soon be buried deeper than his belly.

Up on the divide, granite ridges carved a wall of polar wind into howling, frigid blasts which stirred the young buck to move down the mountain. He sought the cover of sheltered areas where the wind would slacken and the snow would no longer hinder his movements nor hide vegetation from his muzzle. Areas with twigs, seedlings, and grass. Some place safe, where energy-sapping escapes could be avoided during extreme cold. The growing storm blew hard across his strong, brown back. The buck chose a side-hill course around doghair lodgepole. Down the mountain he went. Down, into pine and fir forests, foothills, and bunchgrass prairies. Into wetlands and river bottoms. Down, into his winter range.

Big Game Winter Range

Montanans are fortunate to share their state with numerous herds of big game. These animals possess great ecological, economic, and psychological importance to most of us. The ability to hunt or observe deer and elk plays a role in shaping our identities. Yet, Montanans often permanently occupy habitats essential for big game animals' continued survival—their winter range.

This land use pattern began when homesteaders and railroad companies first came to Montana. Farmers and ranchers chose valley lands best suited to agriculture and range, the gently sloping benches and river grasslands. Railroad land grants included these ecosystems, as well as adjacent mountain slope forests. As a result, much of Montana's deer and elk winter range became privately owned early in the state's history. Often, only steep, mountainous areas and marginally productive plains remained in public ownership. It has been estimated that as much as 85% of the winter range in Montana is currently in private hands ("In Search of a Better Relationship," *Montana Outdoors*, Sept./Oct. 1977).

Big game animals adapted to the conversion of their winter range to agricultural uses. However, the character of agricultural use began to change about 20 years ago. Many farms and ranches were subdivided into smaller tracts for recreational and residential home sites. The increasing demand for rural, nonfarm lifestyles has continued to erode the agricultural land base. People, dogs, fences, overgrazed range, and unregulated off-road vehicle use have placed intense pressure on big game animals and encroached on their territory. The result: Winter range has rapidly disappeared.

Protective Measures

In 1973, in response to a rapid increase in subdivision activity, the state Legislature passed the Montana Subdivision and Platting Act. The law enabled counties and communities to review the impacts of proposed subdivisions—including effects on wildlife—and to determine if development was in the public interest.

Unfortunately, this piece of legislation has not always protected critical wildlife habitat. Subdivision regulations also tend to affect only *how* land is developed, not *if* it should be developed. County comprehensive plans often recognize the importance of big game winter range, but enforcement through zoning and other measures is ineffective or nearly nonexistent in agricultural areas. Governmental efforts to purchase critical habitats have been partially successful, but funds are limited. The simple truth is that public acquisition of private agricultural land can be unpopular and

expensive. So, winter range continues to be lost to development each year.

Agricultural buyers and landowners are often caught in the middle. Those wanting to buy land strictly for agricultural purposes cannot compete in the marketplace because land values for rural, but nonfarm, acreage can be three to five times higher than land sold for purely agricultural purposes. Subdividing the land can yield a huge profit, and it is unrealistic to ask farmers and ranchers to voluntarily give up their rights to subdivide to provide the public with open space and wildlife. So, economic incentive often results in conversion of winter range and other wildlife values.

One of the solutions to this pressing problem is for the public to compensate the landowner to protect conservation values. The means to do just that currently exists under both Montana and federal law: It is a voluntary technique, and it is called a *conservation easement.*

Conservation Easements

A conservation easement is a deed which conveys certain property rights, but not title, to the land. It conveys these rights to a government entity or to a tax-exempt conservation organization. Within the state, the Montana Conservation and Open Space Easement Act of 1972 provides for voluntary establishment of conservation easements on private land and makes available certain tax advantages to the donors of such rights.

Here's how it works: The conservation agency or organization analyzes the area proposed for a perpetual conservation easement and prepares a thorough ecological baseline study. The Miscellaneous Revenue Act of 1980 (Public Law 96-541) names four specific categories for which a conservation easement may be granted: significant open space, public recreation, natural ecosystems (including rare and endangered species), and/or areas of historical significance. To be eligible for a conservation easement, a landowner need have only one of these values on his land; if one or more is found, the agency suggests how the significant conservation values may be protected. Restrictions in the easement deed may prohibit land uses incompatible with those values—such as subdivision and development, unregulated off-road vehicle use, and overgrazing.

Organizations which receive the easement, such as the Department of Fish, Wildlife and Parks, monitor the land to ensure that those rights of use severed from the title are never exercised by the landowner or his heirs. All other rights of use remain; the land stays in agricultural production and on the tax rolls. The critical difference is that big game winter range is protected in perpetuity, and it is done voluntarily.

A Case Study

The 1,600-acre Trinity Ranch lies in the Bitterroot Valley, at the joining of the east and west forks of the Bitterroot River, about 20 miles south of Hamilton. Intense subdivision pressure exists in the area—the population of Ravalli County has increased by 50% between 1970 and 1980. Trinity is one of the few remaining large holdings on the west side of the valley. The ranch encompasses a wide variety of terrain, including wetlands along the Bitterroot River, irrigated cropland, pasture, foothills, and mountains. The foothills and mountain slopes support ponderosa pine and Douglas-fir forests of various habitat types. Regionally, the property is important deer and elk winter range, and it is also adjacent to U.S. Forest Service (USFS) lands designated for wildlife management.

In 1976, the ranch was subdivided into 20-acre parcels, a move which generated considerable local and regional opposition. However, the entire ranch was sold to new owners interested in ranching and wildlife conservation. They abandoned subdivision plans and set out to re-establish ranching and farming practices and to preserve wildlife habitat and open space. After careful consideration, the

"Conservation easements . . . are creative, flexible, and effective voluntary tools for protecting winter range and other vital public land qualities."

photo: Harry Engels

new owners decided a conservation easement would be the best way to meet their ecological and economic goals.

The ranch was analyzed, and a Deed of Conservation Easement was drawn up which suited both the landowners and the USFS, which accepted the easement. The landowners agreed to give up those rights of use which could adversely affect wildlife or other environmental factors, but they retained rights to assure flexibility and capability of using the land as a viable ranching unit.

The easement prohibited subdivision for development purposes, but the landowners retained the option to build a few additional homes as part of the ranching operation. If built, these homes would have to be outside sensitive deer and elk habitats and riparian (streamside) communities. To prevent predation and harassment of deer and elk, domestic dogs had to be under direct control of a responsible individual at all times. Off-road vehicles were prohibited, except for agricultural purposes. The landowners agreed to practice sustained yield management of all resources on their property. The easement contains reasonable restrictions on use of agrichemicals and predator control. The owners also agreed not to place commercial enterprises, mobile homes, or campgrounds on their ranch. They retained the right (in exactly the same manner as any other landowner) to control public access.

This easement succeeded in maintaining the property as a working ranch, but winter range and riparian communities were also protected. The landowners received tax deductions for donation of the conservation easement and self-satisfaction for protecting wildlife and open space and for establishing a type of ownership which strongly encourages responsible stewardship of the land.

Tax Implications

The public, in effect, pays for conservation easements. The grantor of a conservation easement is compensated by the public through potential income tax savings. The amount of tax deduction generated by an easement conveyance is determined by comparing the appraised value of the land before and after rights are severed. For income tax purposes, the difference equals the value of the gift donated.

The biggest problem in using tax savings as an incentive for easement donations is that the landowner has to have sufficient income to shelter for it to be financially worth his while. For those landowners with high incomes, easements are extremely attractive. However, most agricultural landowners have low cash flow and plenty of tax deductions walking around on four legs. Such landowners cannot afford to donate an easement. Their biggest tax liability usually comes with sale of the property for development or with assessment of estate and inheritance taxes. In either case, few landowners realize that a conservation easement could provide at least partial protection from capital gains or inheritance taxes. How then can easements be acquired to protect winter range?

Public Funds

In recent years, public funds for acquiring winter range have been reduced or, in some cases, eliminated. Purchasing conservation easements rather than property could extend the effective return on each public dollar. Conservation easement values in Montana have ranged from 10% to 80% of the land's market value for development. Thus, where one acre of land could be purchased outright, a conservation easement could be acquired over two or more acres.

Management costs would be limited to monitoring activities by the state or federal agency or conservation organization owning the conservation easement. Tax-paid management costs are reduced per acre protected. If a public agency owns the easement, no in-lieu tax payments are made to local governments. The agricultural landowner is compensated directly. The public is assured maximum return for funds targeted for open space and wildlife conservation. These lands stay on the tax rolls at values related to the limited ownership retained by the landowner, but the land continues to be assessed and taxed on an agricultural use basis.

Design Solutions

Another approach to permanent and voluntary winter range protection is a *design solution*. This involves careful ecological analysis of the land to identify the core areas of winter range, as well as the sites most suitable for development. Preceding the sale, the landowner could donate a conservation easement for the critical winter range habitat or over the entire property, reserving the right to develop only the least ecologically sensitive sites. An innovative design solution can make the property more attractive in the marketplace. Home sites adjacent to perpetually protected open space and wildlife habitat may have substantial value.

Income generated by sale of the property could be partially sheltered by the tax deductions made possible by donation of the conservation easement. Under the right circumstances, using easements could create a situation in which the landowner achieves both income and conservation goals. At the same time, areas of critical importance would receive substantial protection. Landowners should confer with proper legal, tax, and land use consultants to clarify the opportunities involved and to receive maximum protection of their interests.

Land Trades

Land trades also hold promise as a way to conserve winter range. Land ownership exists at many levels of government and public lands with marginal value for public purposes are likely to be found within these holdings. However, these lands may have some value as real estate, and they could be traded for private land or easements over private land to protect winter range or other wildlife values. Lands given up in this manner could be subject to partial restrictions if some public value exists and can be protected.

Public land could be traded subject to specific reserved rights for the public, such as access, maintenance of specified range, or open space conservation. The result of well-designed trades can be protection of additional winter range, more efficient land management by public agencies, lessened administrative cost, and possibly increased acreage on the tax rolls.

The Future

The Danish philosopher Kierkegaard wrote: "He who fights the future has a dangerous enemy." The task of ptotecting big game winter range is, in effect, a fight to redefine what kind of future awaits us and those who come after us. More and more critical wildlife habitat is now being converted to intensive, rural, nonfarm land use. Montana's subdivision laws have not been totally effective in slowing this conversion. If the present trend continues, we face a future poor in big game.

Conservation easements, design solutions, and land trades are creative, flexible, and effective voluntary tools for protecting winter range and other vital public land qualities. The proper application of these and other innovative techniques can conserve Montana's wildlife heritage for generations to come. ■

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